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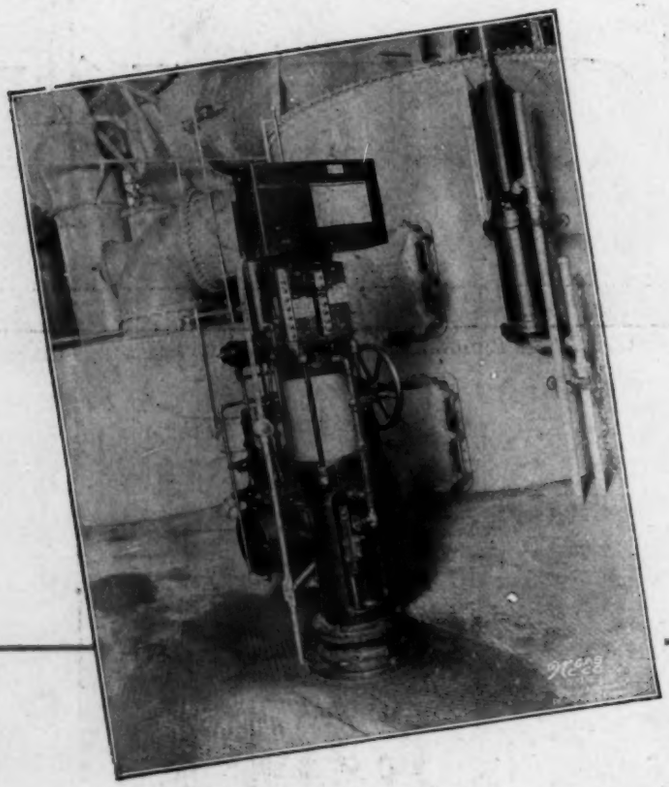

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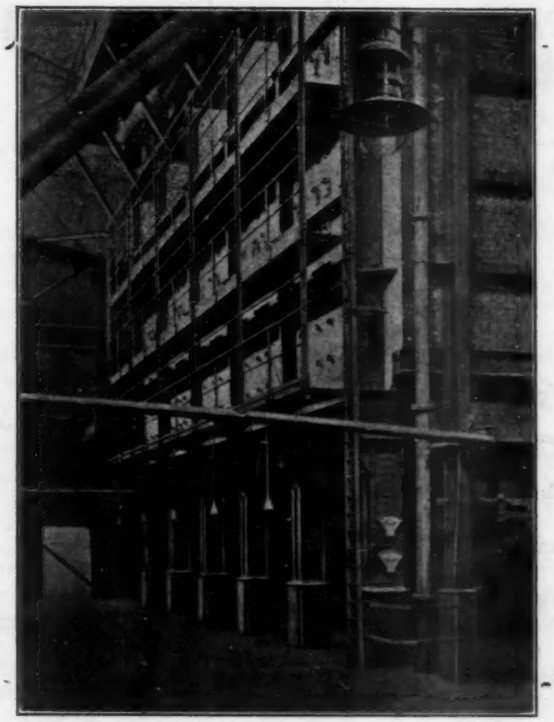

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American Gas Journal

SIXTY-THIRD YEAR

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WALTER A. FAIRSERVIS, Editor

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American Gas Journal

Formerly American Gas Light Journal

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JUL 26 1922
SMITHSONIAN DEPOSIT

Criticism

Constructive, but Pointed

By R. H. BURDICK, Chief Gas Engineer, Electric Bond & Share Company

"Speaking generally, municipal governments, the public and the press have no sympathy for a public service corporation, or the rights of security holders. Many business men of highest personal probity will lend their support to unfair measures calculated to ruin such enterprises.

"It is our view, as the result of more than forty years of observation and experience, that investors should not place their funds in the securities of companies whose very life may depend upon the caprice or incompetency of municipal governments and public service commissions or where franchises are inelastic and forbid increases of rates sufficient to meet operating costs and fixed charges. Regulation has frequently proved to be only a disguised form of strangulation.

"The utterly damnable conduct of some municipalities toward their public service corporations should be sufficient warning as to others.

". . . We cannot too strongly advise against investment in such companies, no matter where located, by whom managed, or by what bankers the securities are offered."

Here is offered the first of a series of articles dealing with every phase of the gas business. Mr. Burdick is an authority on this subject and what he has to say is bound to be of great weight. — Editor.

The foregoing statements made their appearance in a circular published recently by a New York security house.

Aside from any possible ulterior motives which may have been behind their issuance, there is sounded in these quoted paragraphs an elemental warning to those interested in the welfare of public utility companies, both large and small.

A unanimity of prejudice, such as is reflected in this abstract, cannot be entirely attributable to biased mentality or intentional viciousness. Municipal governments, the press and the people at large are certainly amenable to the basic laws of cause and effect.

No business as intricate as that of rendering non-competitive public service can be properly sustained by failing to create a favorable sentiment among the very people who subscribe to it, by the assumption of a complacent non-progressive attitude toward its supporters, or by promulgating platitudes and bromides whose intent is to hoax the people rather than to lay before them a true picture of the difficulties and obstacles confronting its sponsors.

Recommending Self-Analysis

A little introanalysis will aid in emphasizing certain defects in the manufactured gas industry which result from a lack of realization of its possibilities and which have not been susceptible to logical explanation, thereby encouraging public distrust, the rendition of inequitable decisions by well-meaning public service commissions, and have served to make it a political football.

The majority of American gas companies are soundly financed along the lines of all similar conservative financial operations. Those which are not are rapidly profiting by the failures of their companions in crime by putting their financial houses in order. As a small stockholder the gas consumer is coming more and more into prominence as a partner in the gas business as well as an earner for himself and his co-investors through the use of gas, and is demanding the abandonment of unbusinesslike and unprogressive methods too often employed in the operation of this industry.

It is the lack of prompt response to this growing demand which is influencing public opinion adversely and permitting the parasitic politician to lower the vitality of the gas business through attacks on its vulnerable points. To the layman it seems amazing that a traffic serving over half the population of this

country and representing an investment of five billions of dollars should not have improved and perfected its operating methods to an extent which will permit the taking of the public into full confidence. Before condemning the public for its attitude of indulging further in the popular move of securing added revenue through increases in already strained gas rates, let us exert every possible effort to reduce operating expenses by the elimination of inefficiencies in operation, and thus assist toward the fulfillment of the ever-present obligation to our investors to create financial returns commensurate with the risk they have assumed by placing their funds in our keeping.

An analysis of the 1921 business of seventeen gas companies, which distributed a total of 4,750,000,000 cu. ft. to 128,000 consumers out of a population of 745,000, indicates the following average percentage of their operations divided according to the usually accepted classification of utility accounts:

Classification		Per Cent of Total Operating Expenses
A. Gas-manufacturing Expense—		
1. Operation	59.0	
2. Maintenance	3.5	62.5
B. Transmission and distribution expense—		
1. Operation	4.0	
2. Maintenance	5.0	9.0
C. Office operation		8.0
D. New-business expense		1.5
E. General expense—		
1. Taxes	3.0	
2. Other general expenses	16.0	19.0
Total operating expenses		100.0

These figures show that a most profitable field for investigation, looking toward the obtaining of economies, lies in the department of gas manufacture. Any definite percentage of improvement therein will obviously yield greater returns in the form of net divisible income than an equivalent percentage improvement in any other department.

Are We Mossbacks

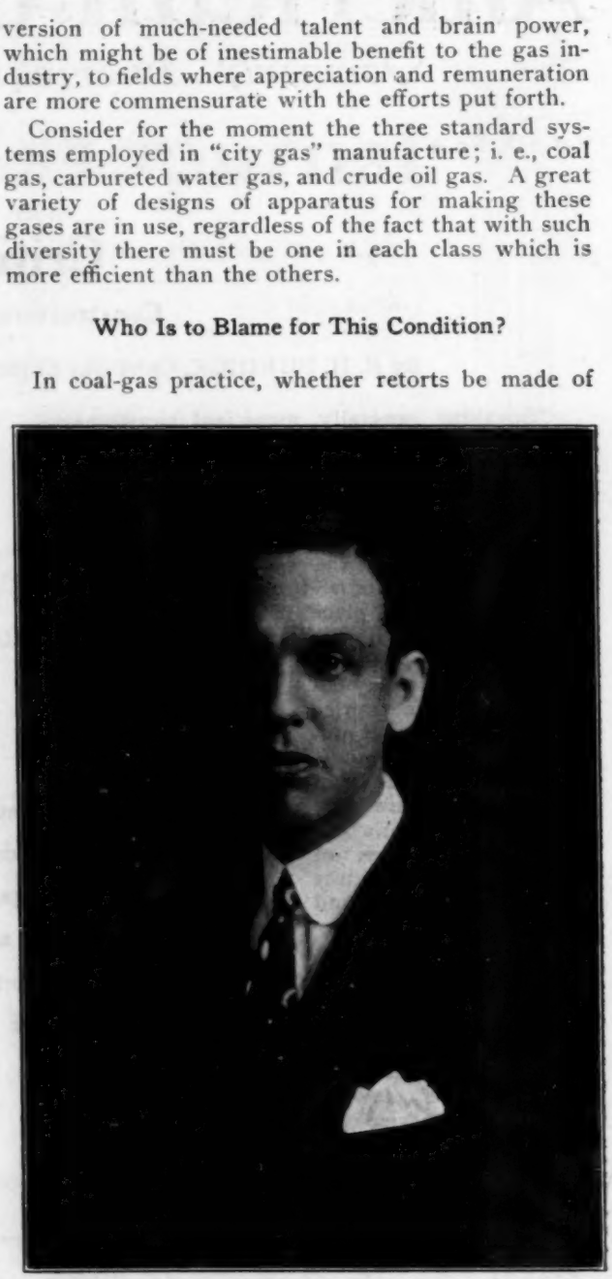
It is curious commentary on the gas business, in the main, that in its most expensive branch of operation—that of gas production—is to be found an almost fanatic adherence to old-fashioned apparatus, equipment and methods. During the past fifty years certain improvements and refinements have been made in our gas plants which pertain chiefly to auxiliary operations; efficiencies in gas manufacture have been increased slightly, but no fundamental changes in the art have been put into general usage since Lowe brought out his scheme for making carbureted water gas.

American inventive genius has not necessarily been lax nor failed to grasp the significance and opportunities for development of new economic systems of gas manufacture, but barriers of skepticism and indifference have too frequently been raised against it by ultra-conservative financial interests and hide-bound utility operators. The result has been the diversion of much-needed talent and brain power, which might be of inestimable benefit to the gas industry, to fields where appreciation and remuneration are more commensurate with the efforts put forth.

Consider for the moment the three standard systems employed in "city gas" manufacture; i. e., coal gas, carbureted water gas, and crude oil gas. A great variety of designs of apparatus for making these gases are in use, regardless of the fact that with such diversity there must be one in each class which is more efficient than the others.

Who Is to Blame for This Condition?

In coal-gas practice, whether retorts be made of



R. H. Burdick

silica or regular fire clay, whether they are horizontal, inclined or vertical, seems to depend upon salesmanship on the part of the equipment manufacturer rather than discriminate choice on the part of the user. Coal-gas operators seem to give little heed to any system of gas production which is not based on the fundamentals laid down by Clegg and other early English gasmen. Systems for extracting gases from coal under high vacuum, at low temperatures, by means of catalyzers or by semi-chemical reactions seem to receive little, if any, consideration from the average American gas engineer. Even by-product coke ovens are more often than not regarded by him

as belonging to a business distinctly foreign to the gas industry.

Water-gas engineers know comparatively little of the physical and chemical reactions taking place within their generating sets, nor of the physical effects of temperatures and pressures not commonly employed. One of the more recent improvements in water-gas production—that of employing high blast pressures—was developed by blower manufacturers rather than through the primary initiative of gas-plant operators.

Crude-oil gas production, which is an offspring of carbureted water gas manufacture, has probably been developed further and with more intelligence than the other two systems on account of its comparative newness and also because necessity forced the evolving of a gas-making method to meet the economic needs of our fast-growing Western civilization.

This Strongly Resembles Waste

In some instances coal gas is being manufactured where the cost of raw materials and other expenses for producing water gas or crude-oil gas, even including fixed charges on complete new generating equipment, would be less than for coal gas. The reverse is as often true. In certain localities, where coal gas is being logically produced, by-products are grossly wasted or incompetently handled. In numerous coal-gas plants, which have a ready market for their chief by-product—coke—it is being consumed in large quantities as bench fuel or boiler fuel when a cheaper form of fuel, i. e., coal, is readily available. Valuable tars, oils and ammonia are run to waste due to a lack of exercising a little ingenuity in their disposal. Although not the prime object of the gas industry, the business of disposing of by-products can be made into a valuable credit-producing adjunct to the manufacture of gas, and as such it certainly should be given as much consideration as other auxiliary operations.

A systematic study of the territories wherein manufactured gas is served will reveal numerous possibilities for constructing large by-product coke-oven installations which could readily supply gas via high-pressure transmission lines to groups of "city gas" distributing systems more economically than it could be manufactured locally. Such central coking plants would obviously be better equipped to develop and market coal by-products and thereby relieve the gas operator of one of his embarrassing problems. A few such installations have already been made and the movement in this direction is bound to grow in a manner similar to that of the hydro-electric industry.

We Are Criticised by Outsiders

During the World War—particularly that phase which called for American participation—when gas oil prices climbed skyward, engineers of the gas fraternity began to experiment in the utilization of cheap, low-grade oils for carburetion of water gas. When a slump in oil prices took place paralleling the general depression of industrial activity after the close of the war, this development work ceased in spite of the fact that even to-day the so-called "low-grade" oils are to be had at prices proportionately lower than the standard grades of gas oils. This adherence to the usual types of gas carbureting oils by water-gas engineers has formed a basis for censure on the part of Government officials and oil operators. When it is considered that those fractions of crude oils usually known as "gas-oil fractions" are readily convertible into automobile fuel and that any marked improvement in the automotive industry will require such conversion with a corresponding detrimental effect on gas-oil prices, it would seem that the criticism by these gentlemen is well taken.

In the matter of crude oil gas manufacture, fluctuating prices of competitive fuels make the disposal of its chief by-product, lampblack, uncertain. One progressive oil-gas company has carried out a successful series of experiments to demonstrate that crude-oil gas can be economically manufactured without producing any appreciable quantity of lampblack, but in its stead a group of more valuable by-products which can command a ready market at all times. This company is now converting its plant for the purpose of accomplishing this on a commercial scale.

State regulatory bodies, due to their lack of appreciation of the overall economic value of low thermal standards for gas, have fallen into the habit of requiring heating values of between 500 and 600 B.t.u. per cubic foot—a vicious heritage of old candle-power days. Not a few gas companies are distributing a product which fails to come up to these requirements, thus drawing a fire of merited approbrium for violation of commission rules on the one hand or in order to "play safe" are enriching their gas to a wasteful point above the stipulated standards on the other hand, because their processes of manufacture are not capable of, or subject to, careful control.

Other phases of the gas business are susceptible to constructive examination but not perhaps with the same relative possibilities of creating added revenue as are inherent in the manufacturing department.

It is not the intent of this article to prescribe a general panacea for the ills of the gas business, but rather, through brief analytical criticism, to kindle, on the part of such operators as may read these lines, a desire to examine into the detailed affairs of their companies, and to thus take cognizance of their shortcomings.

The elimination of waste, the exercising of common sense, backed by logical interpretation of analyses and prompt correction of known faults of operation, will aid greatly in establishing that sort of public confidence which is the basic factor controlling the fortunes of the gas industry.

Purifying Gases

One of the most difficult impurities to remove from illuminating gas is carbon oxysulphide. This impurity is readily absorbed by passing the gas over activated charcoal, which an acid reaction. Such a process of purifying gas has been patented in British Patent No. 180,024, which is assigned to the Badische Anilin und Soda Fabrik. Activated wood charcoal or charcoal deposited on fireproof carriers may be used. It is rendered alkaline by means of ammonia or the ammonium salt of a weak acid. The carbon oxysulphide that is absorbed may be oxidized by means of oxygen added to the gases, in order to maintain the activity of the charcoal.

A. G. A. Convention Program

This is the layout of the program as prepared at this time; it may be subject later to some slight change or rearrangement:

General Session (Convention Hall, ocean end of Steel Pier)—Tuesday morning, Oct. 24, 10 o'clock.
- Meeting called to order and opening remarks—D. D. Barnum, president.
- Report of secretary-treasurer—Oscar H. Fogg.
- Membership report and election of individual members.
- Report of treasurer—H. M. Brundage.
- Address of the president—D. D. Barnum.
- Report of time and place committee (1923 meeting).
- Amendments to constitution and by-laws—William J. Clark, chairman.
- Report of committee on standard gas-appliance specifications—William T. Rasch, chairman.
- Address, "How Far Are We Justified in Applying the Cost of Service Principles in the Gas Industry?"—Hon. Carl D. Jackson, member of the Railroad Commission of Wisconsin and former president, National Association of Railway and Utilities Commissioners.
- Motion pictures—showing of the A. G. A.'s latest film, "Around the Clock with Gas"—auditorium of Steel Pier.

Executive Session (only company member delegates eligible to attend).
- Election of company members.
- Election of directors.
- Election of 1921 nominating committee
- Election of committee on resolutions.

General Session (Convention Hall, ocean end of Steel Pier)—Wednesday morning, Oct. 25, 10 o'clock.
- Report of committee on rate structure—J. D. Shattuck, chairman.
- Address, "Public Relations"—J. S. S. Richardson, city editor, Philadelphia *Public Ledger*. (Presented for publicity and advertising section.)
- Address—Hon. W. D. B. Ainey, chairman, Public Service Commission of the Commonwealth of Pennsylvania.
- Report of committee on accident prevention—Charles B. Scott, chairman.
- Report of commission on resuscitation from carbon monoxide asphyxiation—for the commission, by Drs. Yandell Henderson and Howard W. Haggard, of the Laboratory of Applied Physiology, Yale University, New Haven, Conn.

General Session (Convention Hall, ocean end of Steel Pier)—Thursday morning, Oct. 26,10 o'clock.
- Talk, "The State Committees on Public Utility Information"—B. J. Mullaney, Chicago, Ill.
- Address, "The Importance of Accounting in Rate Cases"—A. W. Teele, C. P. A., New York City. (Presented for accounting section.)
- Address—John S. Irvine, president, National Association of Master Plumbers of the United States.
- Paper, "The Preparation and Sale of Coke for the Domestic Market"—R. S. Fletcher and W. G. Rich, Providence, R. I. (Presented for the technical section.)

General Session (Convention Hall, ocean end of Steel Pier)—Friday morning, Oct. 27, 10 o'clock.
- Report of committee on the president's address.
- Paper, "The Gas Appliance Price Situation"—A. P. Post, Philadelphia, Pa.
- Paper, "Selling the Gas Bill." (Presented for the manufacturers' section.)
- Open forum. (An innovation in the program this year will be the open forum. The time so allotted will be taken up with the discussion of management and policy problems. The chair will recognize any member who wishes to present his views or seek information on any subject of such character. Advantage should be taken of this opportunity by the delegates to discuss other important subjects not on the program.)
- Closing remarks.

Crude Ammonia Liquor as Fertilizer

By ISMAR GINSBERG, Associate Editor

Adopted from the Original German Article in "Das Gas und Wasserfach," 1922, Pages 123 to 124

The sale of ammonia liquor in the crude form, as it is recovered in the gas plant, for fertilizing purposes in the place of sulphate of ammonia is an attractive proposition from many standpoints. The additional expense incurred in labor and materials in the conversion into sulphate would be avoided, and the shipment of the liquor would entail less cost and less trouble than the transportation of ammonium sulphate in barrels. The principal question is whether the farmer will obtain the same good results with the use of crude liquor as he does with sulphate of ammonia. Recently, a very interesting report was published by the *Wirtschaftliche Vereinigung Deutscher Gas Werker*, which is concerned with the marketing of the by-products produced in German gas works. This report contains some very interesting and enlightening information on the value of ammonia liquor as a fertilizer. The Germans have been con-

fronted for a long time with a freight situation which has made it much more advantageous for the gas works to sell crude ammonia liquor direct to the farmer for fertilizing purposes than to convert it first into the sulphate.

Practical Results Obtained with Crude Ammonia Liquor as Fertilizer

The marketing association referred to above concerned itself with obtaining the opinions and testimonials of large farmers, based on actual experience with the use of crude ammonia liquor as a fertilizing material. In one case it was asserted that practical experience indicated that any sort of land could be fertilized with crude ammonia liquor. It can be used at any time of the year in strengths varying from 1.5 to 2 deg. Be. The method of application is the same as that used in the fertilization of land with any liquid manure. The results obtained were far better than with ordinary manure and they were particularly good in the case of meadowland. The application of crude liquor to meadowland is carried out with the best results in dull weather. Due to the considerable amount of heat which beats down upon the meadowland when the sun is shining brightly, there is some danger of burning the grass when the fertilization is accomplished under these conditions. The best results with arable land or fields of stubble are secured when the land is ploughed immediately after the application of the liquor.

Heavy sandy land was fertilized with ammonia liquor. In wet weather or when the snow is lying on the ground the liquor at 3 to 3.5 deg. Be. was applied direct. Otherwise it is diluted to 1 to 1.5 deg. Be. Land on which cereals are grown should be treated with the liquor about two to three weeks before sowing. It is not necessary to dilute the liquor before use if sufficient rain falls between the time of application and the sowing of the seed. To an acre of land about a ton and a half of liquor was used and the increased fertility for oats and pasture amounted to 50 per cent, though somewhat less for other cereals.

In fertilizing potato land with crude ammonia liquor, it was thought for a while that the liquor produced a peculiar taste in the potatoes. During a recent hot summer, potatoes were planted on land which had been treated with crude liquor the previous year and on which oats were grown. The potatoes in this case were satisfactory in every respect. The use of ammonia liquor in the fertilization of farm land not only enriches the land but it also prevents excessive growth of weeds and kills all insects and vermin.

General Directions for Use of Ammonia Liquor as Fertilizer

A list of general directions for the use of ammonia liquor as a fertilizer was made from answers to inquiries sent out to 330 gas works which have been selling crude ammonia liquor for this purpose for the last ten to twenty years. Some of the more important of these directions are given below:

The liquor is generally distributed from the plant in barrels or carts, and can be either stored, mixed with other fertilizer or used at once. In the undiluted condition it should be used only on fallow land, and to obtain the best effects in warm sunny weather, so that the weeds growing thereon may be destroyed. In order to avoid evaporation the ground should be plowed up immediately. In all other cases it is much more advisable to dilute the liquor before use. Water or liquid farm manure is used for this purpose and the spreading of this mixture over the fields should take place in rainy weather when possible, but in any event warm or sunny weather should be avoided. In all cases the fertilization should take place at least a few weeks before sowing and if rain falls in the meantime a distinct advantage is gained. Heavier soil should be treated earlier than light soil. The spreading of the liquor over the land may take place from barrels arranged on carts and provided with a sprinkling pipe just like street sprinkling carts. Details are also given regarding the various amounts of gas liquor that should be used for different crops of truck vegetables and grains at different times of the year. The degree of the dilution of the liquor varies in accordance with the dryness or moisture of the ground and the prevailing weather.

Special Direction for Special Crops

Directions are also given for the use of gas liquor as a fertilizer under various conditions of the land and according to the crops grown thereon. The fertilization of meadow and pasture land planted with cereals, potatoes, vegetables, fruit trees, root crops, etc. It is mentioned that the crude liquor is not suited for fertilizing clover lands. Growing cereals, such as corn, should not be fertilized with the liquor. Very good results were obtained with vegetables, the yield being increased almost double. The crude liquor should not be used with young trees, but older trees, treated in the spring in damp weather, have given good results. The use of the liquor in fertilizing root crops has also been very successful. The treatment is carried out in the autumn or early spring. Due to the fact that the fertilizer promotes rapid growth of the plant, the weeds are prevented from getting the upper hand and the yield is increased considerably. Both light and heavy soils may be fertilized in this manner with equally as good results. In all cases where gas liquor has been used for fertilizing purposes, it has been reported that weeds and all sorts of harmful insects and worms have been completely destroyed.

Conclusion

The considerable amount of successful experience that has been had with gas liquor as a fertilizer seems to indicate that its use as such is bound to give good results, provided care is taken to follow out the instructions implicitly. The main point that must be observed in this connection is that the fertilizer should never be put on the plant, but always into the ground. It is likewise claimed that when success is not had with the gas liquor fertilizer the fault lies not in the material but in the mode of its application.

The Most Elaborate Long-Distance Gas-Piping System on Earth

Strange and Costly Devices Secured to Do Their Several Parts in Bringing the Gas from the Remote West Virginia Fields to the Homes of the Queen of the West

By FELIX J. KOCH

Looking for a really extraordinary job, are you—something not so very difficult; at the same time, something that has enough of excitement—of thrill—to prevent your tiring of ennui, and something providing quite enough exercise in the open to keep even the most exacting layman in trim?

Good! All that is necessary is that you apply at the nearest employment office of the Union Gas & Electric Company, of Cincinnati, for a position as pipe-line inspector and, receiving your appointment, proceed to your patrol against the naphtha thieves.

Never heard of them?

Possibly not. The naphtha thieves, as they are always known in the gas-well country, rather center their activities about the pipe lines, and unless one is closely associated with the gas company in point one doesn't feel himself much concerned. Strangely enough, in our modern code of ethics, there is thieving and *thieving*, and country folk who would give hot pursuit to a man stealing a penny roll from the baker in town wink an eye and laugh indulgently as they hear of the activities of these naphtha thieves.

The spoils of these thieves are interesting, and the seeking them often costs the big transcountry pipe line a tidy sum in repairs.

The city of Cincinnati is heated to-day almost exclusively by gas. Much of its residential area is still lighted very largely by gas. A great many of its giant industrial plants are operated by gas. As a result, stupendous volumes of gas are required in the city each day and this comes through the big cast-iron pipes, 200 miles and more from the fields. Just before entering upon its long journey, the gas passes through familiar devices for removing all gasoline from the vapor. These devices do their work very thoroughly, but never so thoroughly but that there is some gasoline vapor; it is called here, left behind. This flows along with the rest of the gas until, here and there, in some low-lying valley, or in the bed of a river, it meets extra cool temperatures. Then it condenses and it flows along, impelled just a little by the onward pressure of the gas, to "pockets," where it may rest.

It isn't long before wily countrymen of the locality come to know just about where such pockets may occur. It isn't long before they have found a way of tapping the pipes at such a place. They draw the gasoline, mix it with naphtha from the general store at the cross-road—for it is altogether too high-powered a fluid for use in their cars as it stands—and then, off and away with it for running their tractors and their pleasure automobiles.

Now it isn't the taking of the gasoline to which the gas company objects quite so much; as a matter of fact, the less gasoline there is in a pipe, the more room there is for the gas to flow through. What it does object to is the way—rather common with pilferers—things are left in their wake.

Pipes have been tapped, as already suggested. Tapping is never done with especial care for the pipes. Care is rarely taken to see to it that taps are closed fully—gasproof—after the pilferers have secured their pillage.

So the big gas company must needs have its riding police looking after the pipes.

This, though, is but one of an infinity of novel and interesting bits of the day's work of bringing the vapor through the longest continuous gas-pipe system perhaps of all the world.

Cincinnati's gas and its travels, in fact, form a most interesting tale to the gasman.

As we get the story from Frank H. Lillie, of the publicity department of the gas company suggested, the basic home of this natural gas is what is popularly known as the northern district of West Virginia, where gas has been found to flow in profitable quantities in not less than eight neighboring counties. If a line were drawn due west out across the State from Point Pleasant, where the Kanawha and the Ohio rivers join, one should have, just to the south of this, the better part of the big gas field. From the Toane, Clay, Kanawha, Boone, Lincoln, Wayne and Wingo districts especially, Cincinnati draws an unfailing supply of gas.

Metropolis of this gas belt, then, and so the site of no end of activities of interest to gas-folk, is the good city of Charleston. The place still boasts the very first house in which natural gas was put to use in all the belt; and that no longer, then, than 1894. Gas, it is recalled thereabouts, was not in general use the city over until 1905, and the actual development of the resources dates to 1908, when the heavy 20-in. (diameter) transmission main was built out to the west, crossing the Kentucky border some two miles south of the Ohio River and continuing on to Cincinnati, a distance of 175 miles in all.

From this Charleston gas field, then, the gas is taken in what, at the start, is rather familiar wise:

"Our gas producers," Mr. Lillie puts it, "are talking always of lime, coal, clay, slate, sand. Everything not specifically titled otherwise is embraced in this last word—sand.

"So you who go to investigate in the area will find that most of the wells in the more southerly part of our zone are drilled down to the Squaw, Weir or Berea 'sands,' and then to a depth of from 2,000 to 2,500 ft., where the pent-up gas is found. The familiar Gordon 'sand' of the belt to the north is not present here. There, in the 'north counties,' as we know them, production is very generally secured at depths of 3,000 ft. or less. On the other hand, near Fairmount a well is operated at a depth of 7,579 ft.; this the 'deepest' producer in all the world, with its nearest second at Czuchow—in German Silesia, it is now.

"Expenses of drilling to our purposes are often enormous. The records of one of the Charleston wells show that their average cost of drilling in 1921 was $14,000 per well, productives and non-productives taken together! Throughout these natural gas fields it requires the constant drilling of new wells of this type and then their connecting with the main, or established, lines, in order to keep up the supply, which is constantly being depleted. As a result, expenditures of this size go on and must go on indefinitely. We figure that the average well in the West Virginia field costs from $10,000 upward, depending on its distance from available railroad, the expense of bringing equipment to the point where drills are to occur, and the character of the soil, the rock, and other formations through which the bits must force their way! Many of the wells will cost to $30,000; some cost more.

"Maximum gas production was reached there in West Virginia in 1917, when every resource was drawn upon to the limit. Since then wells have shown the result of this drain; and so it behooves us to conserve the gas, and that implies doing all things exactly as best we can to bring the vapor from the well to the actual consumer's door.

"A few years ago," Lillie suggested, turning to charts on the walls of his big, spacious office at gas headquarters here, "the average initial pressure of the Charleston wells was approximately 1,000 lb. per square inch. Constant demand for the gas has reduced this down and down, until now the average pressure will range perhaps 150 lb. Some wells are well above this average, of course; but others, in turn, are down to 10, to 5, lb., and some have been abandoned.

"So much for the old, the established, wells we draw from.

"On the other hand, the new wells in the area also do not show the great pressure once so common. Many of them begin at a rate really only a trifle above the present pressure of the old drillings. On one test we found that the pressure reduced on old and new wells together from 1,000 lb. in 1902 to 112 lb. Naturally, the total volume of the gas remaining in the wells decreases in direct proportion to the reduction in their pressure."

Lillie pointed to several blank spaces on the maps near.

"Still again, urging us to even greater efforts with what gas we have," he said, "as these new wells are being drilled it is also found that there comes an increasing number of 'dry holes,' which bring no reward to anyone. One Ohio source reports that of 197 wells drilled in 1919 there were thirty-four dry holes; of 175 in 1920, fifty-six were valueless; of 191 put down in 1921, seventy-six were non-productive. Consequently our experts report out of West Virginia that it will not be many years before four or five wells will have to be drilled for every one really paying its way! If the work on these wells averages $15,000 each—which is not at all an extravagant estimate—each producing well will cost from $60,000 to $70,000, or even $75,000; and no one can tell how long its productivity will last once it is done. That ultra-costly well may dwindle to nothing in its supply in a very short time indeed.

"As a case in point here," he turned aside, "one recalls the tremendous excitement which occurred when Foster tapped the McKeesport (Pa.) field in 1919. With feverish excitement, 608 wells were drilled by the 1st of October, 1921; but by that date only 129 of the lot were worth anything at all. This decline is an outstanding example of the hazard and the uncertainty attaching to our gas supply!

"But our difficulties do not cease here.

"Time was when the original 'rock pressure of the gas wells,' we call it, was strong enough to force the gas through the pipe lines to the point of use. That day has passed, except for those persons who live very, very close to the leases.

"Consequently, so-called compressor stations are being built at appropriate points throughout the fields. These stations take the gas as it comes through the pipes from the wells and compress, or squeeze—'boost,' our workmen say—the vapor to a higher pressure per square inch to bring about greater expansion, or velocity, when the gas is released into the main outgoing lines. Because of the heat created in this process, our gas cannot be compressed with any safety by one operation more than four and a half times the rate at which it flows from the well. Consequently, some of the Cincinnati supply must pass through six compressing operations before it reaches the gas jet or the heating stove of the consumer!

"Exact methods in this matter of bringing the gas from well to city may be of interest.

"The basic concern involved in this matter of transmission maintains a station at Kenova, W. Va., not far from the Kentucky frontier, to turn over its gas, as it were, to our company for eventual use here. In other words, duly compressed—at least, initially—the gas proceeds into the 24-in. high-pressure underground main which will eventually carry it roundabout Cincinnati, and from which our local company will distribute it to the actual consumers through our network of pipes. That gas, parked at Kenova for such sending on, comes, after several compressions to start with, from points scattered over a wide area; some of them so much as 125 miles to the east and meaning, therefore, that the fuel will have been transported 300 miles and more before reaching the Queen City homes.

"These requirements force us to many things," Lillie hinted.

"For one, in order to be sufficiently close to a group of wells so that the original pressure, or expansion, of the gas shall not be lost entirely before reaching the engines needed to accelerate this, our compressors must often be built miles from the nearest railways. Far from those sources of transportation, they must also be located near a dependable water supply; for the gas becomes very hot—sometimes dangerously so—during the compression, and must therefore be cooled instantly. Investments of from $250,000 to $1,000,000 in a single compressor station are far from being uncommon."

He turned to another graph near.

"Here are the records of the Cobb station, which supplies part of the natural gas delivered by us in Cincinnati," he said. "It is a typical example of what has had to be erected in connection with our long-distance pipe lines.

"To begin with, this place may be said to be rather fortunately located as stations go, being about two miles by dirt road from Clendenning on the railroad. This stop is about twenty miles above Charleston.

"The Cobb station had to be equipped with twin tandem compressor engines averaging 18 tons in weight and with a total horse-power of 7,490. As the bridges across the Elk River, which separates Cobb from the railroad suggested, are not strong enough to bear the weight of the engines suggested, it was necessary to let

these down the steep declivity beside the railway track and then drag them through the water (that is the only word to fit the work). At center channel this water completely submerged the bed-plates of the machine, so deep was it. Reaching the other side, there came a still more trying haul up the banks and so to the compressor station beyond. The addition to the equipment here about to be made as we chat, and consisting of another 970-h.p. machine, will necessitate the repetition of this process all over again!

"Nor are one's expenses over when the initial machinery is in shape and the big, important additions are made from time to time.

"As the natural rock pressure in the wells declines, wholly new, entirely additional compressors are necessary; otherwise we could not force what gas there is left very far beyond the area in which produced.

"So much for Cobb station proper.

"But along with it, back in the hills to the east of the place, all aside from the investment which must go to maintain the intervening, or 'boosting,' station to the west before one reaches Kanawha, there are wholly other compressing stations besides which pick up the gas from the more isolated wells, compress it and pass it on to Cobb, where then an additional operation is performed.

"And even this is not all" Lillie laughed, realizing that the story was growing strangely complicated.

"A part of the pressure produced at Cobb is lost by the friction of the line from Cobb to Kanawha, which performs another 'operation,' we always call it, to force the gas into Kenova, where it is again boosted to such an extent that the expansion of the compressed gas will carry it to Cincinnati.

"Kenova, in the meanwhile, is drawing from other stations than Cobb or Kanawha—such, for example, as Branchland and Nye to the south—with an intercommunicating pipe-line system that allows of the shutting off of any particular station when desired; or the connection of all when the demand is heaviest. To depend on but one or two main stations would be an eternal source of low pressure—of lack of supply—when trouble arose at any one station, or when main transmission lines were damaged by flood or landslide, or any one of the innumerable unexpected occurrences with which the gasman must deal.

"Now reflect an instant.

"A child can understand how this—the connections between—requires actually hundreds of thousands of miles of pipe.

"Believe it or not, we find that every foot of the main lines of these pipes should be inspected daily. When one recalls, then, that despite this 'perpetual inspection,' it is called, as many as eighty-seven unexpected breakdowns will occur in the main transmission lines of a single filiary company in a single year, it is plain that the problem of dealing with an element like gas under pressure—leaking at the veriest pinhole size aperture—becomes a most colossal one.

"Again, extensions of lines to reach new wells, adding to the cost of the new wells themselves, all over and above the cost of the established system, will extend the sum total for operations by many millions annually.

"And now, as to returns—as to the selling end of the product of all of this, in last analysis:"

Lillie weighed his words very carefully as he continued:

"The most important feature of a gas service—the thing which brings patrons, which holds the client already secured—is availability of the fuel when needed. Enough wells must be drilled, enough compressors must be created to meet a demand that—for short periods really only—is four or five times the usual requirement.

"In a year, here in Cincinnati, there will be about twenty days of maximum demand; about three months of the twelve have a requirement that is at all great. During the nine months—and more especially during the 345 days out of the 365 suggested—much of the gas which is available must be shut back in the wells, and some of the big compressing stations may be shut down altogether or be running two or three engines of an equipment of ten or even twelve. During those idle summer months, however, most of the operating personnel of the other seasons must be maintained since inexperienced men would be fatal to successful operation when the need is greatest. The maximum operating cost of the individual stations, running from a few hundred to several thousand per month, must necessarily be kept close to that figure the year round. A station and its equipment may become practically valueless because of the gas wells giving out, and then its only salvage worth is the junk value of the machines."

So there are other interesting variants to the story of bringing the gas to Cincinnati.

At Cobb, the company maintains a gasoline-extraction station of the sort hinted at in the preceding paragraphs. It has often been said that extracting the gasoline lessens the quality of the gas very greatly. As a matter of fact, the company's experts now find that this extraction does not alter the heat values to the extent of one per cent, and that if this gasoline were not removed the mains would freeze in the winter time, since the gasoline vapor quickly condenses to a liquid. What is more, this gasoline vapor attacks the rubber gaskets at the pipe joints, and if present in the gas in any appreciable quantity is a decided menace to good service throughout. In fact, the United States Bureau of Mines itself states that the loss from extracting the gasoline from natural gas is insignificant and inconsequential when compared with the advantages attained, not only to the producer and distributor of gas, but also for the domestic consumer of natural gas.

Other factors, overlooked often by the layman to the subject, make inroads into the revenue brought by the gas on reaching the city.

The ever-present requirement of locating new producing wells calls for the expenditures already suggested. But, along with the cost of drilling, piping, operating, there comes the cost of leases—short-term alone usually obtainable—and then having to be renewed from time to time. Lease rentals and royalties often run up to many hundreds of thousands of dollars yearly.

Finally, out of the apparent chaos of it all, one has the perfected, the fully operating, the absolutely to-be-relied-upon system.

One has the men searching constantly for new wells, drilling as experiment; "wildcatting," it is called. One has the new wells being opened; one has these and the older wells being pumped. One

has the gas brought to receivers; one has it freed of its gasoline; one has it compressed and recompressed, over and over, as it goes on.

Finally, one has it reaching Cincinnati and sent out, through the network of mains for instant use, or for pouring into huge containers—three and a half million capacity, some of these are.

In either case, sooner or later, Cincinnatians get the gas for their consumption. And, lucky folk! despite the giant costs involved—the endless journey almost made—they pay to-day but 50 cents the thousand feet for the gas, delivered wheresoe'er in city bounds.

Planning a Special Sale

A Story of Pacific Coast Doings

In the last number of the *Gasco Bulletin*, published by the Portland (Ore.) Gas & Coke Company, J. H. Hartog, the new-business manager, in his characteristic way described how special sales are planned and "executed." It seems that sometimes the sales manager is the executor and that at other times the weatherman is the executioner. Evidently the weatherman gave Portland a taste of winter in the middle of June.

The article is addressed particularly to the fellow employees of the company, and as many in similar employment are readers of the AMERICAN GAS JOURNAL it may be equally interesting to them. For the benefit of them it may be stated that Portland is a city of a quarter-million inhabitants and the figures quoted should be considered with reference to the population.

Mr. Hartog went on to say:

"Like the annual visit of the circus, foretold by glaring posters till all the world is agog and we jump out of our seats when we hear the first shrill notes of the calliope, so likewise the gas company's annual sale of —what? Just to see whether you are aware of your company's doings and whether you keep up to snuff by scanning the daily newspapers, I said 'What?' Why, of course you all read the papers and the big ads with their black corners haunt you, and, moreover, you wouldn't think of coming to the office without looking at the shrieking posters on the doors or windows, nor could you possibly pass our minutemen as they pop up here and pop out there, most unexpectedly, with the posters on front and back (not of the minutemen, but of the side cars)—so you answer, 'Yes, the annual sale of tank heaters.'"

Yes, thank you! And so in the spring the sales manager's thoughts turn to the big event, the Grand Derby, the Classic if you please—the annual sale of tank heaters.

The Plan of Attack

Big, glaring ads are thought out. A special low cash payment is sanctioned by the general manager. Long-drawn-out instalments, so easy that even he who spends his all can pay, are enthusiastically "oh-kayed" by the credit bureau. The assistant sales managets gets out his baton, gathers unto himself his salesmen, saleswomen—aye, even the janitor—as would a hen gather her chickens, and "just before the battle, mother" he rehearses the concert for the big week and sees that all play in tune while he wields the baton with an energy worthy of Sousa.

The week approaches. The first day dawns. Before the robins are after their worms the aforesaid sales manager steals down to the front porch to remove the morning paper and anxiously turns to the city news page to see if the big ad is in all right.

If the printer has made no error, then all is well and he hikes back to bed till the alarm clock signals S O S.

The windows have meanwhile been dressed up in true tank heater sale style, the whole salesroom looks like an animated ad, with banners flying and showcards twirling in the breeze every time the candy whistles, and all is set for the fray.

The Weather Plays a Prank

"Lay on, McDuff" quoth the chief salesman. But lo, what's this? A cloud, a sound of storm, and behold winter has returned to p. p. c., or pay parting call. "A bas" the weatherman who has waited till all was set for our annual tank heater sale and pulled the props from below us. It was like December. Straw hats had to stay home. Fur throws were less ridiculous. Look east or west, or north by south, and wherever the eye beholds a chimney it is sending forth smoke. It was June, or almost such. At least the calendar so confirmed. Nevertheless, in spite of the calendar the furnaces were called upon to supply heat once more, and with the heat hot water through their coils. A sale of fur caps or a special on furnaces would have been more timely!

It did not matter if the sales department begged the newspaper-reading public *not* to light the furnace but to use a Radiantfire (which meant get one at the gas office, if you are still so benighted as to be without this *ne plus ultra* of all gas appliances—the Humphrey Radiantfire).

Never Say Die

The sales force, in spite of the weatherman's barrage, put in some pretty good licks and wound up the week with a total of 205 tank heaters.

That ain't anything to go and shake hands with yourself over, but it's better than selling only half as many; and, moreover, the few warm days preceding the cold spell had already brought in a good many orders, so that the month of May totals 336!

An annual sale of tank heaters in this incomprehensible (though delightful) climate of ours is different from an annual rose festival. With the latter, when the cold weather keeps the May roses back till July, the president, Eric V. Hauser, simply tags a P. S. to his invitation for President Harding. The beautiful hand-colored, pen-drawn invitation read: "Please be with us June 10-15. P. S.—Make it June 28. Something's happened." There are no "pea-esses" in tank heater sales or any other sales. When the first gun is fired, the

first ad run, it's stick to the ship, boys, be it rain or shine, hail or snow. What care we? Sell is the word!

APPLIANCES SOLD ON SALES FLOOR

	May, '22	May, '21	April, '22
Arcola boilers	5	0	1
Gar-fired boilers	1	1	1
Gasco furnaces	11	5	13
Hot plates	59	28	50
Radiantfires	22	22	29
Ranges	137	55	119
Tank heaters	336	280	116
Auto. water heaters	8	9	2
Washing machines	14	9	27
Ironing machines	4	0	2

Total amount $32,621.64, $21,227.11 and $24,740.66, respectively.

Business is good. A 50 per cent increase over a year ago and 200 per cent over the dull months speaks volumes. The range sales for May exceeded the unusually big sales of April, 1922, even though the latter included National Gas Range Week with its activities.

Kings County Lighting Company Wins the Gas Case

The Appellate Division of the Supreme Court, New York, has rendered a decision reversing the so-called Greenbaum decision against the Kings County Lighting Company and declaring unconstitutional and void from its inception as to that company the so-called eighty-cent gas law passed in 1916. The decision is as follows:

"This action was commenced June 22, 1916, to restrain the enforcement of and have declared unconstitutional and void Chapter 604 of the Laws of 1916, which amended Chapter 125 of the Laws of 1906 and reduced the price which the plaintifi could charge its customers in the territory served by it from $1 to 80 cents per 1,000 cu. ft. after July 1, 1916. The action was tried at Special Term, commencing Oct. 10, 1918, the taking of testimony was concluded in April, 1919, the opinion of the court was handed down on Jan. 27, 1920, and judgment dismissing the complaint was entered March 29, 1920. The appeal from this judgment was not brought on for hearing until November, 1921. In the meantime an action was brought for the same relief in the United States District Court in June, 1920, and an interlocutory injunction was granted restraining the enforcement of the act, under Section 266 of the Judicial Code, by Judges Ward, Mayer and Knox. On Oct. 20, 1920, a final decree was made and entered in said action adjudging the act of 1906, as amended by the act of 1916, in so far as it related to this plaintiff, unconstitutional and void as being in contravention of the Fourteenth Amendment to the Constitution of the United States. This decree was entered on the opinion of Judge Hough (Kings County Lighting Company vs. Nixon, 268 Fed. R. 143). On appeal to the United States Supreme Court the decree was affirmed March 6, 1922 (42 Sup. Ct. Rept. 268 not as yet officially reported, Sub. Nom. Newton Attorney General vs. Kings County Lighting Company).

"The opinion of the learned justice at Special Term (110 Misc. 204-250) shows a steadily rising cost of production, in men and prices, for all the commodities that were used in the manufacture of gas and the cost of labor, until in 1918 the point was passed where income exceeded cost. But the court regarded the times as abnormal and concludes: 'The Government in granting a franchise to a public service corporation does not guarantee a profit at every moment of the corporation's activities. All that such a corporation is entitled to is protection against inadequate returns upon its investment which are likely to continue for such a length of time as would result in the impairment of a very substantial portion thereof, or a deprivation of an adequate return upon its capital.' The opinion closes with the statement, 'without prejudice, however, to reopen the case by appropriate proceedings if, after an adequate experimentation under an 80-cent rate, it believes it can prove that this rate is confiscatory to it.' In commenting on this judgment and the contention that it was a bar to the prosecution of this action in the United States District Court, that court said: 'The judgment entered in the Supreme Court of the State on March 29, 1920, concluded nothing except matters which become history with the end of 1918. By its specific terms it left further occurrences open for future litigation and this is the further litigation' (Kings County Lighting Company vs. Nixon, supra p. 148). In my opinion we should treat the result of the action in the United States District Court with the same force and effect as if the case in the Supreme Court of the State had been reopened that it might be shown by actual experience that what was shown to be the probable result of operation under the 80-cent gas rate was a fact, viz.: that operating within the statutory rate not alone was no adequate return made on capital invested in the business, but that actually no return at all was made and that capital was being depleted. The necessary conclusion follows that the act should be declared unconstitutional in its inception. We must also bear in mind that the question to be determined arises under the Federal constitution, and hence is a Federal question, and the final court of review not alone of the decree of the United States District Court but also of the judgment of the Supreme Court of the State of New York, is the Supreme Court of the United States; and that court has affirmed the decree of the District Court. If our opinion differed from its determination we should accept its decision. But from an independent examination our judgment was that sufficient had been proved on the trial in this action to demonstrate that the act of 1916, in reducing the price of gas in the district served by the plaintiff, was unconstitutional. The Public Service Commission has the power to fix the price that the company may charge for gas (L. 19 Ch. —): in the proceedings the commission will ascertain the necessary components for a decision as to what would be a fair and reasonable rate. We are of opinion that an extended review of the evidence is not necessary at this time. If the parties feel that it is necessary to make new findings of fact to sustain the judgment they may be embodied in the order to be settled herein.

"The judgment and findings so far as inconsistent with our decision are reversed, and the order appealed from affirmed, and judgment directed for the plaintiff, declaring the provisions of Chapter 604 of the Laws of 1916, amending Chapter 125 of the Laws of 1906, in so far as they apply to the plaintiff, unconstitutional and void, with costs to the appellant in this court and the Supreme Court. All concur."

As the Journal Views It

The Convention Program

The tentative program of the annual convention of the American Gas Association, to be held in October, holds much promise of interest to the gasman. While the program is not detailed in so far as the sectional gatherings are not included, at the same time we can say that the reports of the various committees will contain much meat that should aid in solving the every-day problem.

In connection with the announcements of the program it is interesting to note that for the first time in the history of the gas industry there will be published simultaneously with the meeting a complete report not only of the papers but also of the discussion; this, of course, is made possible through the publication of the AMERICAN GAS JOURNAL each day of the convention. These dailies will be not only comprehensive in so far as the sessions are concerned but they will be a faithful mirror of all of the side lights of a convention as great as ours. This is going to give the dailies a double value, for it will enable those who attend the convention to keep in close touch with events, while it will likewise furnish a record that can be and should be preserved and referred to in years to come.

The completeness of every department in the publication will also add to its value to the gasman, so that it safely can be said that the program as outlined in another column will be carefully and painstakingly reported for every branch of the gas industry. We have been told that our conception will add manifold to the value of the convention, and we believe it.

Uniformity of Decision

The decision of the United States Supreme Court in the case of the Consolidated Gas Company of New York, its subsidiaries and other companies has served to clear up numerous conflicts of opinion from various courts that were creating a great deal of confusion.

A most concrete example of this is in the case of the Kings County Lighting Company with the so-called Greenbaum decision. In this case the court held against the company in practically every particular and upheld the contention of the municipal government. The decision had to do with the rate charge and the 80-cent gas law of New York State, the company depositing the difference in its rates (95 cents) and the amount fixed by statute. The case was appealed by the company, but there was great delay in handing down a decision by the Appellate Division. In the meantime the Greenbaum decision was quoted far and wide as a precedent for numerous similar findings. Now, however, the Appellate Division not only follows the United States Supreme Court in finding the law unconstitutional; it also, on a review of the case in question, finds that the trial judge erred in his findings.

Here is a most remarkable state of affairs brought about by the fact that a State court has rendered an opinion which has been knocked out by our highest court but which, because it was not individually up for review, was continued to be quoted.

We can think of no stronger argument against the Bacharach bill, or any similar measure, than the incident thus pointed out. The far-seeing man will readily appreciate it.

Gas Decision

A decision of more than ordinary interest has been handed down by Judge John C. Pollock of the Federal court in Kansas City, Kan., to the effect that the State Utilities Commission has no jurisdiction in the matter of regulating rates of a distributing company doing an interstate business in furnishing gas to cities and towns.

The case under consideration was an application for an injunction by the Consumers Light, Heat & Power Company, of Topeka, Kan., and the Utilities Commission of Kansas, asking that the Kansas Natural Gas Company be restrained from putting into effect a 40-cent rate for natural gas at the city gate, and a threat that if the consuming company did not pay the rate the Kansas Natural Gas Company would shut off the supply. This hike in the rates was to be effective April 1. The former rate was 35 cents.

Local companies appealed to the Utilities Commission when the distributing company announced the advance in the rate. The Kansas Natural Gas Company in its reply contended that it was doing an interstate business, and that it was purely a distributing company, and held that the Utilities Commission of the State had no jurisdiction in the case. The Utilities Commission cited a decision of the Kansas State Supreme Court to the effect that the commission did have such jurisdiction. The appeal was made to the Federal court, with the result that the court held, after having the case under advisement for about a month, that the company was an interstate

corporation, and that the jurisdiction in the matter of fixing rates did not lie with the State Utilities Commission.

At the same time the order affecting Kansas towns was made the Kansas Natural Gas Company notified the Kansas City (Mo.) Gas Company that the rate to it would be raised. Similar action to that taken in Kansas has been had in Missouri, and there is a case before Judge Van Valkenburgh of the Federal court here. No announcement as to when he will get to the case has been made, and no intimation as to what action he will take has been given out.

About the time the Topeka company went into the Federal court with its plea for an injunction, the State Utilities Commission and the Wyandotte County Gas Company went into the State Supreme Court of Kansas with a similar case. It remains to be seen whether the State court will agree with the Federal court. If it does, it is predicted that the controversy will end there. If it should differ, the matter will be carried o the United States Supreme Court.

If Judge Van Valkenburgh agrees with Judge Pollock it may be that the case as to the increase of the rate will be tried jointly either by himself or Judge Pollock. If he differs, the rate for Missouri will be referred to the Utilities Commission.

Both in Missouri and in Kansas, the local companies have applied to the utilities commisions for the privilege of increasing the price to the consumer to cover the advance, in case the demand of the Kansas Natural Gas Company for an increase is sustained.

Natural Gas Fight in Louisiana Legislature Ended by Compromise

Senator E. Wayles Browne, of Shreveport, who introduced a bill in the present session of Louisiana Legislative Assembly to prevent the carbon-black industry from wasting and exhausting the supply of natural gas in that State, has placed himself upon record as approving the bill substituted in place of the one introduced by himself. The substitution of a new bill originated in the unanimous vote of the Senate Committee on Conservation for a favorable report on a substitute measure.

In its original form, the Browne bill would have greatly curbed the use of natural gas for the manufacture of carbon. As a matter of fact, in expressing their views on the subject, experts declared that the bill would have had the effect of driving the carbon-black industry from the State of Louisiana, as it would have been an economic impossibility to operate successfully and still comply with the drastic law.

The substitute bill is tantamount to a compromise and is considered satisfactory by both sides. Each faction was given due consideration when the substitute measure was compiled and has been accepted as an amicable settlement by the interested parties.

John M. Parker, Governor of Louisiana, is said to be greatly instrumental in the acceptance of the compromise. Settlement was reached during a conference with him late in the afternoon after a series of conferences had been held between senators and various State officials throughout the day.

Under the compromise, the Commissioner of Conservation still has the authority to decide whether or not the use of gas by the carbon-black industry is exhausting the supply of this natural resource in the soil and to adopt measures to prevent the continuance of such use. This has been the bone of contention for the carbon-black interests since the introduction note the use of gas by the carbon-black industry is of the Browne bill, but because of limitations placed upon the present exercise of authority of the Commissioner of Conservation, while other industries are still to be introduced to the gas fields, the new bill is considered regulatory rather than prohibitive.

An explanation of the compromise was contained in a statement issued by Senator Browne, as follows:

"The substitute bill reported by the Conservation Committee for the bill to regulate and ultimately prohibit the manufacture of carbon black from natural gas in this State, while not going quite so far as the bill introduced by me, contains provisions of vast importance to those who are using and expect to use natural gas for industrial and domestic purposes in this State.

"Under the bill as reported, and which has been agreed upon by all parties, the percentage of gas which may be used from any well for the manufacture of carbon black is placed at a maximum of 10 per cent of the potential capacity of such wells and a minimum of 15 per cent. In addition to this, the Conservation Commissioner is authorized and directed, whenever the demand from industrial and domestic consumption renders such course necessary, to further decrease the percentage of gas which may be used for the manufacture of carbon black. Such further decrease, however, may not be made until after the promulgation for sixty days of a notice to that effect.

"I see nothing to prevent the Commissioner of Conservation, under the provisions of this bill, from fully protecting the gas fields of this State from any wasteful use, and from conserving an adequate supply for all other commercial uses, including the domestic and industrial use which may be afforded by the construction of pipe lines and elsewhere in the State. As for New Orleans, however, it is not too much to hope that gas in all necessary quantities may be found in St. Bernard Parish almost at the city's gates."

While the two factions fighting for and against the continued use of Louisiana's natural gas for the manufacture of carbon black seem to be satisfied with the outcome of the legislative battle, it remains to be seen whether or not the financial interests, who are to finance the pipe-line project, also approve of it. These latter interests have definitely stated that they will not risk their capital unless laws are passed which will prevent other interests from exhausting the supply of natural gas before the amortization of the pipe line. If these financiers are not satisfied, then the whole wrangle in the legislative chambers would be without avail as far as the pipe-line project is concerned.

Senator Browne's optimistic view of gas possibilities in St. Bernard Parish, "almost at the city's gate," is without sufficient grounds to merit serious acceptance. True enough, operators are drilling for oil or gas in St. Bernard but as yet neither has been reached. True enough, certain geologists have painted the prospects of these operators in rosy colors. But how often haven't we found these same conditions existing in other parts of the State and country even, without the ultimate materialization of these bright-hued "prospects"?

Developments in Gas Technology

Important Information Gathered from All Parts of the World

By ISMAR GINSBERG, B.Sc., Chem. Eng., Associate Editor

Chamber Oven for the Production of Gas and Coke

The improvement in the chamber oven, used in the production of gas and coke, which is patented in German Patent No. 350,483, is a Koppers patent. In these chamber ovens, which are intended for operation with rich and poor gas, it is known that the rich gas is mixed with the flue gases in such a manner that the mixture corresponds essentially to the poor gas, as far as the conditions of combustion are concerned. On the other hand, it has also been customary in normal operation—that is, when the coke oven installation is heated with a part of the gas that is evolved during the formation of the coke or with a part of the rich gas—to connect the heat accumulator or regenerator with the collecting pipes which run on both sides of the battery. These pipes are the ones that serve in one case as fresh air pipes and in the other case as flue gas pipes, as the blast is changed.

In this invention it has been made possible to operate such an installation, as is described above, with rich gas, partly mixed with flue gases, on one side, and on the other side with poor gas. This is brought about by making the connection with the collecting conduit, which serves alternately as flue gas pipe and as pipe for the introduction of the air required for combustion, with connecting pieces of piping, which are provided with cut-off devices, so that either the air or the flue gases may be cut off at will.

Removal of Sulphureted Hydrogen from Gas

The process that is patented in German Patent No. 350,591, which is assigned to the Gesellschaft fuer Kohlentechnik m.b.H., is concerned with the removal of the sulphureted hydrogen content of gas. This consists in washing the gas with a solution of a copper salt. The resulting copper sulphide, which is worked into a paste with oxygen containing gases, is then converted into the sulphate by oxidation under pressure and at elevated temperature. The gas can also be washed with solution of other metallic salts besides copper, as for example with zinc salts. In this case the resulting sulphide is treated with a solution of copper sulphate and converted into the sulphate and sulphide of copper. Then the sulphide is treated again as above to convert it into the sulphate.

Electrically Heated Distillation Retort

The retort is intended for the dry distillation of coal and other combustible materials. The raw material is first heated indirectly by the aid of electricity and then heated directly, whereas an intermediate member of the furnace construction, made from resistant material, separates the raw material from the source of electrical heat. The product of the distillation, which are obtained in the chamber which is directly heated, are constrained to pass either in part or in their entirety through the chamber which is heated indirectly. In this manner the heat which is contained in them is yielded to the coal in this chamber and serves to distill the same partly. The heating chamber, which is heated indirectly, can be constructed of a number of shafts, which are arranged perpendicularly or which are inclined at an angle, and which open into an electrically heated chamber at the bottom. Consequently the raw material which is fed into the shafts moves down the same by force of its own weight and finally reaches the chamber which is heated directly. This process and apparatus are patented in Swiss Patent No. 90,650.

By-products from Gas

Benzol, toluol and light oils are obtained from coal gas by conducting the latter through a washing arrangement, into which oil is allowed to flow from a feed tank, located at a higher level. The oil, which has absorbed the benzol and other products, flows out of the washing arrangement into a receiving tank, and from this it is drawn by a pump and pumped back again into a tank, which is located at a higher level than the oil feed tank. The oil then goes to the distillation plant. The oil, which is freed of its benzol content, is then used over again in the absorption process. (See British Patent No. 165,801.)

The Determination of Oxygen in Gas Mixtures

In the textbooks it is recommended that the cuprous oxids ammonia solution, which is used most for the determination of the oxygen in gas, be made by mixing a solution of ammonium carbonate with ammonia and the cuprous salt. In more exact analytical work it is necessary to compensate for the partial pressure of the ammonia. This is done by passing the residual gases, after the oxygen has been absorbed therefrom, into a sulphuric acid solution, which absorbs the ammonia. Sometimes a certain amount of ammonium carbonate is entrained with the gas, as often happens in rapid work, and this is indicated by the evolution of carbon dioxide gas in the sulphuric acid bulb. This introduces another error into the determination. An exact analysis of gas for its oxygen content consequently necessitates the treatment of the gas in three different bulbs. To simplify the analysis, the ammonium carbonate solution, which is used ordinarily for the absorption of the oxygen, can be replaced with a cold saturated solution of ammonium chloride. This will eliminate one error—the evolution of carbon dioxide gas. For details see *Zeitschrift fuer angewandte Chemie*, 33, page 35.

How Shall We Compensate the Salesman?

By WILLIAM H. MATLACK

What plan or basis of compensation will attract and hold good retail salesmen has ever been one of the foremost questions for the retail dealer in any line to consider, and to-day, with his progressive and aggressive sales plans outlined, this question should be given due cognizance by the commercial department manager of the gas company or sales manager of the gas appliance store.

What plan is best depends upon many factors that will not be discussed here in any detail. One point, however, in connection with the plan of paying commissions only should be mentioned; that is to say, that if the commission plan is to be employed there must, first of all, be a definite plan laid out as to territory, and if men are to be given restricted territories and expected to intensively cultivate and create new business in these territories the manager should work out his plan in such a form as to permit the salesman to receive compensation on some basis for every bit of business coming out of the territory assigned him. Especially should the plan contain a proviso that would permit the salesman who had called on a prospective customer within a period of thirty days, and had record of this call on file, be compensated if the customer called at the store and purchased the appliance the salesman had been trying to interest him and on other or additional appliances that he may purchase. The whole idea being that the salesman, being the original contact between the customer and the company, should be compensated in some manner for his efforts.

In talking to men who have had experience with a plan of payment of commission only, and with men who are working on such a plan to-day, it seems their main complaint with such a plan is that frequently a "star" salesman is given a little the best of the deal and that they, therefore, expend a lot of effort in interesting folks who eventually go to the store to see the appliance demonstrated and in turn are sold by a floor salesman, with a loss of commission to the man who made the original find.

Another detail that seems to cause quite a stir among salesmen and should be defined as to who is entitled to commission is a case where a business or professional man buys an appliance from his place of business, which is in A's territory, and which is for installation in his home, which is in B's territory. This, however, is just one of the technicalities that the commercial manager must iron out and define to his men before any misunderstandings arise.

In building up a compensation plan let your prime object be to secure the very best talent available. A good man (by good we mean a man who knows his line, believes in it and is willing to devote his best efforts to teaching others to believe in it and buy it) is worth as much as three cheap men, whose chief recommendation is that they are steady, constant workers and will work for a small salary or commission, or a combination of both.

Another thing to remember is that while "competition is the life of trade," competition among your own force is folly. Do not employ too many men and let them roam fancy-free. It is better to work out your territorial divisions in such a manner as to assign sufficient territory to a small number of men and let the few earn some real money.

If you find that your city will not support five men, cut your force to three or four. Make the game worth real effort on the part of your men; they, after all, are humankind that like to live well and are willing, in the majority of cases, to expend the proper amount of energy to do so if proper rewards are forthcoming.

Not long ago we were told of a company that was "dickering" with a man to conduct its sales department. It seemed that the man's experience had been just about what the company desired: he was an excellent manager; he had experience in domestic, commercial and industrial sales work; he had vision; but he wanted to live like a regular fellow, and in the opinion of "the powers that be" the salary he asked "was out of all reason." He was not employed; instead the company employed a man at about one-half the salary he had asked. This man went to work, took off his coat and went to; he was a regular fiend for work and he employed a flock of salesmen and began to bombard them with bulletins and jazz and pep talks; but despite all this a check-up after the first month or so indicated that sales were not coming, and while everyone seemed to be working the cost of sales averaged, taking everything into consideration, over 65 per cent. The moral, if there be one, we are forced to omit.

Of course, this is not the general thing; but it does happen, and when it does it is costly in many ways.

Getting back to plans of compensating salesmen, it seems that there is a different plan used by almost every organization; at least, that was our conclusion when we began to go over them and compile our data.

Without any comment, any one man's opinion, we are outlining here several plans that we have learned of, with the hope that the information may be of service to some of the readers of the AMERICAN GAS JOURNAL who are revising their sales plans or who are building new ones.

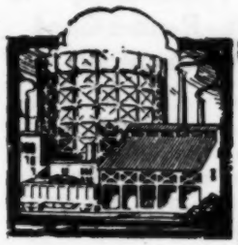
Missouri appliance dealers as a rule pay their salesmen a straight commission. This commission ranges from 10 to 15 per cent. Where crew men are employed to supervise house-to-house salesmen the crew man is paid a straight salary, between $20 and $25 per week, and a small commission, usually 2 per cent, on sales made by men in his crew.

In Chicago, Ill., one organization tied into the manufacturers' organization pays its salesmen a straight commission of 15 per cent. Leads are secured by telephone, newspaper advertising and from national advertising of the manufacturer.

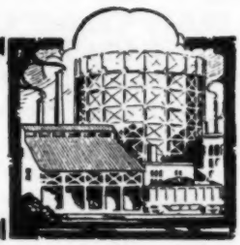
Another Chicago dealer pays his salesmen 10 per cent commission against a drawing account of $40 per week. This company develops leads for the man to work on by use of want ads, together with direct-by-mail and telephone call follow-ups of the direct-by-mail matter three days after mailing.

A gas company in the Middle West pays its salesmen $80 per month plus a commission of 2 per cent if sales amounted to $1,000, 3 per cent if sales amount to $2,000 and 5 per cent for all amounts over $2,000. This company pays the floor salespeople a salary of $60 per month and 2 per cent on all sales.

These plans are offered with the thought that they may be of help in determining an equitable plan, for after all that is what is most essential to sales success.



NEWS OF THE GAS INDUSTRY



Hazards in the Natural Gas Business

Whenever I think the word "gas" it conjures a nameless feeling of dread, of apprehension, in my mind.

It is not a fear that there will not be warmth when a lighted match is touched to the burners of my house heaters. A thorough investigation of this immediate need has convinced me that, barring what old-fashioned folk call "the hand of God," there will be an abundance of gas this winter for all. Only storms and accidents, locally or in distributing centers, things which no human agency may always foresee and control, can prevent a plentiful supply.

What I fear is for the future supply. That, to me, is of tremendous importance. Does the housewife who makes such efficient use of gas to prepare meals and heat her rooms think of that? Does she know the real hazard of gas?

There are some very uncertain things about the production of gas. One of these is well known. It comes from our human inability to see through an opaque surface. If every time the driller put down his bit he could see hundreds of feet down beneath the soil and rocks of the ground, the first hazard would not exist. He would know before he began a well that the gas existed away down below the crust of the earth's surface. He would never waste the money of his company searching for something that was not there.

Undoubtedly this first hazard, this fact of not knowing if gas will be found when the effort to reach that mysterious supply far below us is made, is a big one. It very materially affects the price of gas, retail, for all necessary prospecting is a part of the total cost of gas production. If no individual or company searched for gas the supply would depend upon its accidental discovery, and no great public enterprise like the production of natural gas for domestic use could be founded on mere accident. It must rest on absolute surety. On surety that costs millions of dollars. And on surety that will continue to be expensive until such time as human vision, by means of certain yet-to-be-utilized rays of light may penetrate miles into the stodgy interior of the earth.

But after this surety of supply has been reasonably established, the gas supply agents have yet another big chance to take. After the gas has been found in sufficient quantities to warrant commercial investment in its sources, what will be the character or continuing quality of that gas, and how long may it be depended upon as a source of supply?

This, to my thinking, is the most significant hazard connected with the continuous supply of natural gas.

Let me tell you something about how gas folks have been acting during the few years just passed. First Electra, the phenomenal gas field of the world of its time, played out. Its tremendous rock pressure, which alone forces the purest and most refined fuel known to the world to the surface, where it is available for human consumption, began suddenly to go down. When the offices of the gas company were located in Fort Worth, and I was serving as a reporter on one of our daily papers, this natural phenomena was of deep interest to me.

I used to go to the gas company's office purposely to watch that failing pressure chart of the gas field. I used to feel such real distress about the local politics of that time which interfered with the establishment of new sources of supply. I knew, as a matter of absolute fact, that the first gas shortage was coming and felt sincerely sorry that, all things considered, it could not be prevented. It seemed to me then, and it does now, a colossal piece of stupidity that such a thing could take place in our modern time of co-operation,

One day, as I took a look at the pressure chart in the office of the distributing company, I saw it had gone down twenty-nine feet since the previous morning. I said to the manager, "If people could see that failing pressure chart, do you believe they would permit interference with our new source of gas supply?"

He answered that it would be difficult to convince the public that this failing pressure existed until such time as it actually gave out. Then they would believe the information about depreciation of supply that his company constantly gave out, and blame the company!

And that is exactly what happened. Article after article came out in the papers about the lessening of the gas supply, but not the slightest attention was paid to the matter until north Texas woke up in a gas shortage. Then the politicians who caused this shortage were not blamed. The gas company had to bear the full brunt of the odium for the shortage!

The hazard of gas, aside from the difficulty of its discovery and the uncertainty of its quantity and quality, rests further on the freaks of the elements. Storms and long continued rains and snows and cold weather cause washouts and injuries to the mains which may not be prevented. The distributing companies often prevent serious inconvenience, however, by anticipating these accidents and keeping construction crews on call throughout storm periods. Little trouble of this nature is anticipated for this winter.—K. B. Crawford in the *Gas Magazine*.

Head of City Council Speaks Before Contact Club — President Thompson Praised for His Public Work

Daniel Winters, president of Pittsburgh council, told of the greatness of Pittsburgh, its opportunities and what should be done to make it greater and more prosperous, in addressing members of the Contact Club, an organization of officers and employees of the Philadelphia Company and affiliated corporations at its luncheon at the William Penn Hotel, Tuesday, June 13. Philip H. Lantz presided and introduced Mr. Winters.

In his speech Mr. Winters spoke of many problems as follows: "Among the most important problems which the city of Pittsburgh has to solve are those of transportation, housing, recreation and city planning. Street car service and rate of fare are of great importance to the life and progress of the city and to attracting to the city new industries and the men who work in them. We have wrestled with this street car problem for many years largely as a political issue. The city since 1917 has expended through its public utilities department $266,086.24 for salaries and expenses in carrying on litigation before the Public Service Commission and in the courts. And all the while the service was getting worse and the fare higher. Last year a new "Richmond appeared upon the scene," a man who put the old method of dealing with this street car question on the shelf, who advocated that official and public sentiment should be changed from antagonism to mutual co-operation and to the conviction that adequate transportation is essential to the progress of the city and should be considered from the standpoint of a business problem and not a political one. By his frankness, fairness and candor, and the belief in his integrity and his policy of laying the cards on the table, the mayor and the council were able to consummate a ten-year agreement, which will begin operation in a short time and promises to make great improvement in the street car transportation of the city. This was accomplished without the expenditure of money and was only possible by dealing upon a new principle of co-operation and not antagonism. The man able to bring this about was the president of your company, Arthur W. Thompson." — *Public Service.*

Gas People Hold Dance

Members of the Equitable Employees Association, Pittsburgh, Pa., held a dance on Monday evening, June 26, at Palm Garden.

Gas Girls' Stagette

The girls of the Equitable Employees Association, Pittsburgh, Pa., had a party all their own at Hotel Chatham on May 23, 1922. It could be termed a masquerade, as the paper caps, lorgnettes, etc., disguised the identity of the girls, and the blow-outs, balloons and whistles furnished enough merriment for a Mardi gras.

The fun commenced with the girls trying to guess what they would get to eat, and prizes were awarded to those successful in deciphering the menu, which was as follows:

Lip Sticks and Earrings
Roll Your Own
Flappers a la Camisole
Powder Puffs Jade Beads
Salad a la Bobbed Hair
Mirrors Cold Cream
Toilet Water
Powder and Rouge
Blow Your Own Smoke

The dinner was followed by a social period. Miss Huhn, chairman of the committee of arrangements, first introduced the guests and then in a "dream" introduced all the girls of the association. Each girl rose and mentioned her department as her name appeared in the story, and all felt better acquainted after that.

Miss Mary Russell Purman, of the Associated Bureaus and vice-president of the International Quota Club, gave a very interesting and instructive talk on general business conditions among girls. Miss A. Elizabeth McPherson entertained with a number of readings and solos were rendered by Miss Bertha Zellman, contralto, and Miss Emma Isenburg, soprano. A girls' orchestra furnished the music for the occasion.

Successful Foremanship Is Necessary to Render Good Service Economically

The foreman is the last official representative on the job where the company's money represented by the material used and the labor cost is expended. Here also much of the contact with the public is made.

As our industry has prospered our organization and personnel has grown far beyond the simple family circle of the infant industry. This has unfortunately brought about less close and personal contact between the management and the man on the job and places a proportionately greater responsibility upon the foreman.

We must appreciate the fact that the foreman is the product of the training which develops skilled workmen and we should take into account, at the time of selecting men for this position, the qualifications required to discharge the responsibilities of a thinking leader with some executive ability.

He usually comes by promotion from the gang rather than from the technical school or the office job. This is primarily due to the fact that by daily work and association with his "buddies" he develops those qualities of leadership so necessary to procure efficient production by skilled and unskilled workmen on the job.

The conditions under which the utilities operate have changed rapidly and materially in the past two decades. From a business in which the cost of materials and labor were but a fraction of what they are to-day and where there was no regulation of rates, to the present high cost of material and labor and close regulation of the price for which we can sell our product, is a far cry which makes it essential for us to use every means of economy.

The foreman, by the use of his head, accomplishes a great deal in securing the highest productive efficiency of his particular crew. By thinking about the job and its progress a sufficient time in advance of the work under way he can be sure that in so far as possible delays to the workmen due to the absence of material and tools are eliminated.

To insure the prompt delivery of material for the following day's

work the foreman can turn over the immediate supervision of the work to the junior foreman, or as he is commonly termed the "straw boss," for the balance of the day while he goes personally to the district headquarters to review the following day's work and see that the proper requisitions, work orders and such other forms as are customary with his company, are given to the storekeeper and that the materials are available for a prompt start the next morning.

The foreman should also familiarize himself with what is required in the following day's work so that such changes in tools and equipment can be made to prevent time being lost for the want of these details when on the job.

Furthermore, the foreman can eliminate delays and loss of material due to performing certain operations out of their proper turn. He can anticipate the proper way in which the construction work should progress so as to make it unnecessary to undo some part of the work because it later interferes with some other part. All of us have, no doubt, witnessed the taking down of some part of the construction which was done out of its proper order and later found to be in the way of the further progress of the job.

The foreman is often an all around helper to anyone and everyone who needs an extra hand. This should not be except in rare cases of emergency. The foreman should be the thinking unit of the gang.

We have often witnessed where the foreman is kept busy following the details of the job and concerned with assigning work to idle men when he should be leading the work by having details laid out in his mind in advance of the job progress and work awaiting the first idle moments of the men.

At the present time, when so much effort is being given to the influence exerted by the rank and file of the employees who actually make the contact with public in their work. Hence, the conduct of the employees out on the job is being recognized as a powerful agent for the influence of this public opinion for or against the company.

The nation-wide movement for the elimination of accidents both to the employees and the public and the elimination of interruptions to service, commonly incident to such accidents, all require a much higher degree of supervision by the man on the job.

The foreman must be alive to his great responsibility and his splendid opportunity through close contact with his men to create a faith in the company's management and a belief in the things which bring about real service. You might as well put the men in a fire and burglar proof vault as far as getting the virus of co-operative work into systems of the individuals if the foreman does not believe in and enthusiastically work for the plans and the principles of the management.—*Public Service.*

May Increase Quarterly Rate

New York, N. Y.—Wall Street hears that trustees of the Consolidated Gas Company, at their next meeting, scheduled for July 2, will vote to increase the quarterly rate from $1.75 to $2 a share. An official, when asked to discuss the rumors, replied by saying that nothing could be said in advance of the meeting. It is the belief in financial circles, however, that if the rate of distribution to stockholders is increased this will be part of a plan for revamping the company's capitalization, the first step toward which was the calling of $25,000,000 convertible 7 per cent bonds for redemption on September 1. The last date for conversion, par for par, of bonds into capital stock is Aug. 1, and it is believed likely that all bonds will be converted. With this privilege exercised, the Street believes that the final step in the recapitalization will be the issuance of new no par value shares for the present stock on the basis of two new shares for one of old.

The Gas Combustion Company

The Gas Combustion Company, of Pittsburgh, Pa., recently filled its fourth repeat order for Bradshaw burners at Carnegie Steel Company, New Castle Plant, New Castle, Pa. They have also received an order to equip the new boiler plant of the Tennessee Coal, Iron & Railroad Company, at Ensley, Ala., with the pressure type Bradshaw burner.

Arkansas, Louisiana & Texas Development Company Organized to Utilize Fully Natural Gas Resources

What is probably one of the greatest gas propositions ever contemplated is now under way since plans have been about completed for the further development of the gas fields in North Louisiana and the potential gas fields in South Arkansas. The Arkansas, Louisiana & Texas Development Company has been organized for the promotion of the gas districts in question and for the purpose of distributing gas to surrounding and outlying territory, including the Port Arthur region in Texas, Memphis, St. Louis and New Orleans. The distribution feature will be handled by J. S. Cullinan and associates, who have been investigating the territory, its prospects and the cost of the proposed pipe line for nearly a year.

The Arkansas, Louisiana & Texas Development Company is capitalized at $6,000,000, which capitalization is divided into $3,000,000 of 7 per cent preferred stock and $3,000,000 of common stock. Walter S. McCoy, of Tulsa, Okla., formerly general manager of the Philadelphia Gas Company, of Pittsburgh, and who is recognized and acknowledged as a gas expert of no little ability, has been elected president. The three vice-presidents are as follows: Thomas P. Lee, of Houston, Texas; E. F. Frost, of Shreveport, La., and L. F. Jordan, of New York City—all of whom are well known in gas circles. The advisory committee is composed of J. S. Cullinan, of Houston; Glenn Barden, of Tulsa, Okla., and Pittsburgh, Pa., and Norwood Johnson, also of Pittsburgh.

The board of directors are T. P. Lee, E. A. Frost, W. L. McCoy, Beverly D. Harris, L. A. Eipess and John Walsh, the latter two being from Washington, D. C. Joseph M. Dutton, of Houston, Texas, formerly connected with the Gulf Corporation's allied interests, is in charge of the pipe lines.

The Arkansas, Louisiana & Texas Development Company has taken over the properties of the Union Power Company, Inc., located in north Louisiana. Nor is this all, for the company has acquired leases on much more land

and will start operation of the same within a short time.

To provide for the sale and distribution of its gas, three subsidiary corporations have been formed to avoid any interstate technicalities. These corporations are to be known as the Arkansas Development Company, the Louisiana Development Company and the Texas Development Company. Each corporation will operate gas lines and attend to the distribution of the product in the respective States.

First among its initial operations will be the supplying of gas to the refineries at Port Arthur, Texas. Although Port Arthur is 250 miles from the Louisiana gas fields, it is the closest point of any included in the plans. Even now, preliminary surveys for the line have been made and right of ways are being secured. The Arkansas, Louisiana & Texas Development Company has been rather reluctant to divulge the details of its proposed work and, therefore, very little information along these lines has been gathered by outside interests. Nevertheless, it is said that at least part of the line will be laid with twenty-inch pipe and equipped with three compressor stations. Steam-driven compressors will be installed for the work and present plans provide for a pressure of 325 lb. At the time of writing, bids for material and construction of the main line to Port Arthur are being received and considered.

That the Louisiana gas fields will be able to supply sufficient gas for the project is beyond cavil or doubt. The most recent figures obtainable on the subject show us that for the last quarter of 1921, beginning with Oct. 1 and ending with Dec. 31, Louisiana produced more than sixteen and a half billion cubic feet of this commodity. While it is estimated that the Port Arthur requirements will aggregate no more than 65,000,000 cu. ft., of which 5,000,000 cu. ft. will be for domestic consumption. It is assumed that in supplying Port Arthur with gas, Port Neches, Texas, with requirements roughly estimated at six million cubic feet, will be amply supplied at the same time.

An extension of ten miles from Port Arthur to Beaumont will give the company opportunity of disposing of an additional 19,000,000 cu. ft. Moreover, the sulphur mines of the Union Sulphur Company are located thirty-five miles east in Louisiana, where the requirements are estimated to be 24,000,000 cu. ft. At present the sulphur companies with deposits at Sulphur, La., Freeport, Texas, and Matagorda County, Texas, use nothing but fuel oil for their operations and are considered among the largest users of fuel oil in the country. For instance, the Freeport Sulphur Company consumes something like 4,500 bbl. per day and the Union Sulphur Company infinitely more than that. With the introduction of natural gas into their mines, it is a certainty that these companies will cease using fuel oil in favor of gas—if only from an economical standpoint.

In the course of time, it is said, the pipe line will be extended to Houston, Texas, so that advantage may be taken of that market for twenty-eight million cubic feet. The plans of the company, while including the replacement of artificial with natural gas—the latter having double the heat units of the former—do not include retailing its product to the general consumer. For the present and for some time to come the sole mission of the Arkansas, Louisiana & Texas Development Company will be to deliver gas to the various light companies for individual distribution.

The places mentioned, together with cities and towns en route, will furnish a market for about 143,000,000 cu. ft. That the cities to which natural gas is offered will seize the opportunity with avidity is not to be doubted. What the pipe line will mean to domestic consumers can be imagined when it is considered that manufactured gas in Houston now retails at $1.10 per thousand cubic feet. What it will mean to the future industrial development of the territory which it covers can be judged only by the effect which the advent of natural gas as an operating power has had upon other localities.

New Company Active

The Haynesville Gas Company, which has a franchise to supply natural gas to Haynesville, La., is going after business aggressively and, while this is a new organization, it has already made tremendous strides in supplying its town.

The company was organized in April with C. W. Lane, and H. B. Scofield, of Shreveport, and J. C. Sherman, W. P. Baucum and J. S. Connolly, of Haynesville, as directors. Mr. Scofield was elected president of the company and Mr. Connolly secretary-treasurer. The franchise was granted in April and work on the installation of a modern plant was started. Actual construction began on May 3, and on the 27th of the same month gas was turned on in a part of the town.

According to reports, the laying of street mains is progressing rapidly, and the plans of the company call for a network to cover the entire town. Consumers have been using gas for about two months and additional connections are being made daily.

New Booklet Is Descriptive of Louisville Company

A new booklet has just been published by H. M. Byllesby & Co., describing and illustrating the properties of the Louisville Gas & Electric Company, and charting the growth of the company's business over a period of the last eight years. Photographs of the Waterside generating station, substations, coal mining properties, gas reserve plants and office building are reproduced, together with maps and descriptive matter forming a complete history of the growth and development of the company.

Some interesting statistics, gleaned from the various charts, are as follows:

The company had in operation at the close of 1921, 3,471 miles of electric transmission and distributing lines.

Electrical energy output for the year 1921 amounted to 112,472,478 kw. hr., an increase of 163 per cent over 1914.

Electric power load connected increased from 24,314 h.-p. in 1914 to 64,046 h.-p. in 1921, a gain of 163 per cent.

The number of electric customers served increased 103 per cent and gas costomers increased 29 per cent, during the same period, the total number of customers of all classes served on Dec. 31, 1921, amounting to 97,106.

Copies of the booklet will be sent to interested inquirers upon request.

Gasmen on Picnic

A very successful stag picnic was held at Ephratah, N. Y., by the male employees of the Glen Telephone and the Fulton County Gas & Electric companies. The members of the latter company were returned victors over the phone men in an exciting athletic program.

The program as carried out consisted of a game of baseball, for which they allowed 15 points, tug of war 10, three-legged sack race 5, and sack race 5.

The first event of the day, the baseball game, was filled with thrills and many sensational plays. The Glen Giants were victorious over the Invincibles of the G. E. by a score of 7 to 5. Undismayed by the lead their opponents had obtained the gasmen came back and won the tug of war, giving them ten points. Imbued with a never-say-die spirit, they also won the three-legged sack race and the sack race which gave them a lead of five points and final victory.

The trip which was made in trucks belonging to the two companies proved to be a real treat to the men as the homeward trip was made by way of Fort Plain and down through the Mohawk Valley with the beautiful scenery along the way.

Peoples Gas Sales to Industries Gain

Chicago, Ill. — The Peoples Gas Company recorded a remarkable improvement in business during the first six months of the year. Wholesale sales have gained from a recorded decrease of 2.42 per cent in January, as compared with the corresponding month last year, to 13.40 per cent in June. New business rose from 4,807,000 cu. ft. in January to 10,143,500 in June.

The unusual betterment of the wholesale business of the Peoples Gas Company is a barometer not only of the rapid change in the company but also of the industrial situation in Chicago. As gas is sold in the big manufacturing plants, in the one-man shops and the factories and plants that come between the extremes, fluctuations in its use in industry reflects with accuracy the rise and fall of industrial activity in the territory served.

The wholesale sales of gas for industrial and hotel and restaurant purposes averaged, for the last five months to July 1, about 7 per cent more than the wholesale total in the same months of 1921. The increase was steady, month by month, over the corresponding month in 1921. January wholesale business was 2.42 per cent less than that of January, 1921, but the upward industrial tendency brought a succession of monthly increases until the June gain amounted to 13.40 per cent over June of last year. There was an increase of 2.17 per cent in February; of 3.65 per cent in March; of 6.96 per cent in April; of 8.04 per cent in May, and of 13.40 per cent in June.

The amount of new business more than doubled in the period. The new business in June was 10,143,500 cu. ft., as compared with 9,400,000 in May, 8,275,000 in April, 6,945,000 in March, 6,185,000 in February and 4,807,000 in January.

In the early part of 1920 the industrial department salesmen were taking on new business at the rate of 15,000,000 cu. ft. a month. In May of that year they secured 21,250,000. Then the commercial and industrial slump of 1920 began to cast its shadow before, although it did not become obvious to most people until autumn, the Peoples Gas Company stated in a bulletin to shareholders. Contracts for new industrial business fell to 14,275,000 cu. ft. in June, to 10,500,000 in July and to 6,500,000 in August, a drop of almost 70 per cent below the April record. There was some recovery by October, but it was followed by further decline in November and December. During 1921 the industrial department could not get more than 6,000,000 cu. ft. of new business in more than one month in 1921. The average for the year was 4,444,000 cu. ft. a month. In 1922, however, the betterment has been rapid.

The early part of 1920 was still a boom period, and new business was added every month until the middle of the summer. In every month of 1920 the wholesale sales showed an increase over the corresponding month of 1919. The increase of 8.8 per cent in January rose to 25 per cent in June, and held close to the figure until August. Then the decline came, so that December wholesale business was only 2.31 per cent over that of December, 1919. In every month of 1921 wholesale business was less than the corresponding month in 1920. The situation continued through January of this year. Since then the improvement has been rapid.

The present strike situations will benefit the company, the statement to shareholders adds.

"The coal miners' strike, labor troubles of the railroads and the like tend to check the upward trend in general business and industry and to impose specific burdens upon our business, but the consequences are not uniformly unfavorable to us. One of the consequences is likely to be a fuel situation that will produce an increased demand for gas. This company is fortunately in position to supply additional demand advantageously. It has considerable reserve capacity that can be utilized without new capital expenditure or material addition to operating expenses.

"Meanwhile the management here is pegging away at the task it set for itself when the new gas rates were put in effect last winter; it is undertaking to make money by saving it through increased efficiency and economy of operation; it is undertaking to offset loss of revenue under the new rates by doing more business and doing it more economically."

Desulphurizing of Coke

A study of the desulphurization of coke was begun July 1 at the experiment station of the United States Bureau of Mines at Pittsburgh, Pa. This is a practical follow-up of the theoretical study of the oxidation of iron sulphate in the coke and the subsequent removal of the free sulphur formed by this oxidation. Literature on this subject is being reviewed. Many patents were taken out in the years 1850 to 1870 and few since. Roasting and steaming were favorite methods. In this connection, methods for converting sulphur in coke into the FeS form are being sought. A process based on such method would hold back sulphur that might ordinarily be evolved, then this sulphur could later be removed by oxidation together with much additional sulphur. It seems that Fe_3O_4 mixed with coal being coked decreases the sulphur in solid solution. The work is being undertaken by Dr. A. R. Powell, physical organic chemist, and John H. Thompson, research fellow of the Carnegie Institute of Technology.

Utility Makes It Possible for All Employees to Enjoy Vacation

The Philadelphia Company, Pittsburgh, Pa., has notified its employees of the summer camp as follows:

This year it is possible to offer all the facilities of a summer vacation camp within a short distance of any of the offices or plants of the Philadelphia Company and Affiliated Corporations. This is accomplished through the establishment on Brunot Island of the Brunot Country Club, exclusively for employees of the various companies and their families.

The plot selected is familiar to almost every Pittsburgh resident and offers a beautiful spot for outdoor living with light, gas and other conveniences. The camp will open July 1 and will close Sept. 30, and will be under the supervision of a general committee selected from the Duquesne Light Company section and the Equitable Employees Association.

Selection of the site on Brunot Island will offer privacy for the campers and will also afford proper police protection. In addition, the property is large enough to provide for permanent expansion, and with the present baseball ground will later, it is hoped, be made more attractive by the addition of a golf course and bathing pool.

Few sites could have been chosen more centrally located than Brunot Island, as it is within one fare of the city on several car lines. Three ferries give access from the mainland, two crossing the main channel from Doerr Street and the third crossing the back channel from the McKees Rocks side. After July 1 a footpath will be available on the Ohio connecting bridge which will bring the campers directly into camp without the necessity of using the ferries.

A large number of tents will be available and it is planned to fill these in the order that applications are received. The camp will be divided into three sections for convenience: (a) Married couples, (b) single women, and (c) single men. For the latter sections, present plans are to house four single women or four single men in a tent and it is also planned to reserve a number of tents for transient visitors. The following will be furnished except to those erecting private tents and cottages: Tents and floors, cots, mattresses, pillows, sheets and blankets.

A special request is made by the general committee that reservations for a family tent be made only by those planning to spend the full season at the Country Club. This is made in order that there will not be a number of tents under reservation which will not be occupied.

The privilege is also extended to those who so desire, to erect cottages or private tents which meet with the approval of the joint committee and upon payment of a small fixed ground rental. The present club house is being remodeled and the porch extended, that there will be a combination dance floor and dining hall. Campers may avail themselves of the dining hall or may do their own cooking in their tents.

A bathing beach has been prepared and bathing may be indulged in at certain periods of the day. It is planned to have guards available at the regular bathing hours and the beach will be strictly governed that campers do not go into the water when it is inadvisable.

The camp will be administered by a joint committee from both organizations which will be known as the vigilance committee. At least one member and possibly more of this committee will be at the camp all the time. Supervising the activities of the vigilance committee will be the joint camp committee, which will be governed in its procedures by the executive committee of both organizations. Rules for the camp will be drawn up and posted conspicuously about the camp for the direction of the residents.

Boarding at the camp will be available at $1 per day or $6 per week. In addition to this there will be a tent charge of $1 per week, which will make the total cost, with meals, $7 per week. Moderate prices will be charged for week-end guests, both for tents and for meals.

Install New Gas Main to Take Care of Boom in Building

To improve its service in the Sheepshead Bay, Homecrest and Kings Highway sections, the Brooklyn Gas Company is laying a new sixteen-inch feeder main in Ocean Avenue, between Kings Highway and Emmons Avenue

Following complaints received about the pressure of gas in that district being not quite up to the standard, the management of the company decided immediately to give relief to its consumers. The present main was found to be inadequate because of the remarkable growth in the population of the territory affected and the consequent increase of gas consumers. Building throughout the district is going on extensively and it is expected that, within a short time, Speedway Park, at Sheepshead Bay, will be cut up into building lots and more than 1,000 new homes constructed.

Officials of the gas company went over the situation thoroughly and at once agreed that the present main was not large enough to serve the territory. It was determined that a new main would have to be installed in order to afford better service. The present time for the work was declared to be propitious, since Ocean Avenue is soon to be repaved, following the installation of a sewer by the city and the replacing of the car tracks along that thoroughfare.

A large force of men are now at work, under the direction of Harry Dillon, superintendent of the Brooklyn Borough Gas Company, installing the feeder main. The work is being rushed so that the consumers may have the best of service at the earliest possible time.

"The Doherty News" Revived as Semi-Monthly

The Doherty News, the house organ issued monthly for the benefit of the employees of Henry L. Doherty & Co. and Cities Service Company, 60 Wall Street, New York, but which was discontinued last year, has been revived as a semi-monthly newspaper, the first number of which has just made its appearance. It consists of four columns to the page, filled with news concerning the personnel and properties of the hundred or more subsidiary companies scattered across the continent. The editorial staff consists of Frank LeRoy Blanchard, editor; George B. Walker, news editor, and J. R. Dieuaide, assistant news editor.

Utility Advertising Men to Form Association

Chicago, Ill.—Public utilities of the country are planning to organize for more extensive and effective use of advertising. Preliminary steps in that direction were taken at a conference of utility advertising and publicity men in Milwaukee, Wis., June 13, coincident with the annual convention of the Associated Advertising Clubs of the World.

The advertising and publicity departments of a large number of individual public utilities—electric railways, gas, light and power, and telephone interests—were represented at this conference and it was unanimously agreed to proceed at once with plans for organization on a permanent basis.

The new organization will probably be known as the Public Utility Advertising Association and will be open to the advertising sections of the American Electric Railway Association, National Electric Light Association, American Gas Association, the American Telephone & Telegraph Company, and the Independent Telephone interests, as well as to the various State committees on public utility information, and individual companies engaged in any one of the four major utilities mentioned. Plans are also under way for admitting individuals, corporations and firms engaged in public service. In other words, it is intended to have represented in the new association the full and united strength of the entire public utility industry.

An organization committee was selected at the Milwaukee conference, with W. P. Strandborg, vice-president of the Associated Advertising Clubs of the World, and publicity agent of the Portland Railway, Light & Power Company, of Portland, as chairman. Associated with him will be three members representing the American Electric Railway Association, the American Gas Association, the National Electric Light Association, and one member at large from the electric railways, gas, light and power, Bell and independent telephone companies.

This committee will meet to perfect the permanent organization during the coming sessions of the American Electric Railway Association convention in Chicago, the first week of October. The next step will be the adoption of a constitution and "standards of practice" with a view of seeking membership for the new association in the Associated Advertising Clubs as a distinct public utility department.

Standards of Practice

The purpose and objects of the new organization as set forth in the tentative "standards of practice" to be submitted at the next meeting are as follows:

Realizing our obligation and responsibility to the public to the seller of advertising service, the advertising agent and our own organization, we, as general advertisers, pledge ourselves as follows:

1. To consider the interests of the public foremost, and particularly that portion thereof which we serve.
2. To claim no more, but if anything a little less, in our advertising than we can deliver.
3. To refrain from statements in our advertising which, through actual misrepresentation, through ambiguity or through incompleteness, are likely to mislead the public or be unjust to competitors.
4. To use every possible means, not only in our own individual advertising but by association and co-operation, to increase the public's confidence in advertised statements.
5. To refrain from attacking competitors in our advertising.
6. To refrain from imposing upon the seller of advertising service unjust, unreasonable and unnecessarily irksome requirements.
7. To furnish to publishers, when requested, technical information which will help them keep reading pages and advertising columns free from misstatements.
8. To refrain from and discourage deceptive or coercive methods in securing free advertising, and to do everything possible to aid the publisher to keep his columns free and independent.
9. To require standards for ourselves equal to those we set for others.

Marlboro-Hudson Gas Co.

Boston, Mass.—The Department of Public Utilities has authorized the Marlboro-Hudson Gas Company to impose a base service charge of 50 cents in combination with a selling price of 16 cents a cubic foot.

Strike Natural Gas in France

They have struck natural gas in France.

While drilling an eleven-inch core drill hole in southeastern France to test out for coal, they were surprised by a great flow of gas at a depth of 850 ft.

One of the engineers in charge of the work secured a pitot tube and reported that they had 600-lb. rock pressure. While they were making plans as to how to cap and use the gas, the gas caught fire and then they had one of the gasman's real troubles on their hands.

Apparently all the wrinkle thinkers are not in America, because the method used by the French workers shows considerable originality. There was, of course, no casing in the hole, and they had no known method for tackling even an ordinary gas well, let alone one that was shooting flames more than 200 ft. into the air. But here the thinker put in his appearance and suggested that they use an old gas holder, which during the war had been used as a water tank. This tank was about twenty-five feet in diameter and they rolled it up to the great flame and then tipped it over on the opening, plastered it over with clay, loaded it down with rocks, mud, scrap iron, etc., and soon had the fire under control.

A later test seemed to show that the hole had caved in and blocked itself.

This is the first gas well struck in France and the people of that part of France are very much excited over the prospect of securing the benefits of natural gas service. A company has been organized and plans are now being made to pipe the gas to the near-by towns.—*Natural Gas.*

University of Illinois Students Working at Gas Company Laboratory

Chicago, Ill.—Six students from the University of Illinois are attached to the main laboratory of the Peoples Gas, Light & Coke Company for the summer months with a view to taking up the proposed course of gas engineering that will start at the State school in the fall term. One other student is with Mr. Lowell in the by-products end of it and still another is getting practical experience with Mr. Lane at the West Meter Shop.

Public Utilities Securities Market Report

Prices of Representative Gas Bonds

(Quotations furnished by The National City Company)

Company	Issue	Maturity	July 20, 1922 Bid	Asked
American Lt. & Trac. Co.	Five Year 6s	May 1, 1925	106	106¾
Brooklyn Union Gas Co.	First Consol. 5s	May 1, 1945	95½	96
Columbia Gas & Elec. Co.	First 5s	May 1, 1927	96	96½
Consol. Gas, Elec. Lt. & Pr. Co. of Baltimore	First Ref. 7½s	Dec. 1, 1945	108	109
Consol. Gas, Elec. Lt. & Pr. Co.	General 4½s	Feb. 14, 1935	87¾	88¼
Consol. Gas Co. of New York	Sec. Conv. 7s	Feb. 1, 1925	124	124½
New Amsterdam Gas Co.	First Consol. 5s	Jan. 1, 1948	83	84½
Denver Gas & Elec. Co.	Gen. (now 1st) 5s	May 1, 1949	91½	93½
Detroit City Gas Co.	Gold 5s	Jan. 1, 1923	99¾	100¼
Equitable Illum. Gas Lt. Co. of Philadelphia	First 5s	Jan. 1, 1928	100	101
Hudson County Gas Co.	First 5s	Nov. 1, 1949	89	—
Laclede Gas Light Co.	Ref. & Ext. 5s	Apr. 1, 1934	91	91¾
Louisville Gas & Elec. Co.	First & Ref. 7s	June 1, 1923	100	101
Michigan Light Co.	First & Ref. 5s	Mar. 1, 1946	88	90
Milwaukee Gas Light Co.	First 4s	May 1, 1927	92	93
Pacific Gas & Elec. Co.	Gen. & Ref. 5s	Jan. 1, 1942	90¾	91¼
Pacific Gas & Elec. Co.	First & Ref. 7s	Dec. 1, 1940	105½	107
Cal. Gas & Elec. Corp.	Unif. & Ref. 5s	Nov. 1, 1937	95½	97
Peoples' Gas Lt. & Coke Co.	Refunding 5s	Sept. 1, 1947	90¼	91
Chicago Gas Lt. & Coke Co.	First 5s	July 1, 1937	95	96
Portland Gas & Coke Co.	First & Ref. 5s	Jan. 1, 1940	89	90½
Seattle Lighting Co.	Refunding 5s	Oct. 1, 1949	81	83
Southern California Gas Co.	First 6s	Nov. 1, 1950	96	98
Utica Gas & Electric Co.	Ref. & Ext. 5s	July 1, 1957	90½	—
Washington Gas Light Co.	General 5s	Nov. 1, 1960	94	94¾
Western States Gas & Elec. Co. of California	First & Ref. 5s	June 1, 1941	89½	—

Cities Service Co. in June

Earnings of Cities Service Company, New York, in the statement issued for June and the twelve months showed that in the year ended with June 30, 1922, there was earned for the common stock $5,979,003 which was the equivalent of $12.86 a share. This compared with $5,438,587, which was the net to common stock and reserves in the twelve months ended with May 31, 1922, which was the equivalent of $11.70 a share earned on the stock. Gross for the twelve months period ended with June amounted to $13,482,661 and expenses totaled $448,668. The latter item was considerably lower than the $636,973 reported for the twelve months ended with June 30, 1921. The difference in expenses was proportionately much greater than the difference in gross earnings, the total of the latter in the preceding twelve months period being $19,922,313.

The item of interest on debentures for the twelve months period ended with last month was $2,166,041, as compared with $1,191,414, and dividends on the preferred stock had increased from $4,800,718 in the year ended with June 30, 1921, to $4,888,950 in the corresponding period this year. Total surplus and reserves were at the end of last June $48,306,670, as compared with $48,110,367 at the end of May this year. For the month of June net available for the common stock and reserves amounted to $747,629, as compared with $207,215 in the month of June, 1921. In June, 1921, gross earnings were $823,785 and in June, 1922, these had increased to $1,380,327.

Offer $2,000,000 Gas Bonds

New York, N. Y.—Halsey, Stuart & Co. are heading a syndicate which is offering $2,000,000 of the New York & Richmond Gas Company's first and refunding (now first) mortgage 6 per cent bonds. The bonds, which mature May 1, 1951, and are non-callable until Nov. 1, 1936, are being offered at 97½ and interest, to yield around 6.20 per cent. Application will be made to list these bonds, which are secured by a direct first mortgage on the company's properties, on the New York Stock Exchange.

Gas Company Gets Back $600,000

A decision yesterday by the Appellate Division of the Supreme Court restores to the Kings County Lighting Company about $600,000 of the company's securities, which were pledged to guarantee the return of charges made for gas in excess of the statutory rate. This rate was 80 cents, and when the company was permitted to increase the charge the excess in cash was deposited, but later was changed to securities.

The Appellate Division reversed a decision of the Supreme Court holding the company to the statutory rate of 80 cents and concurred in the ruling of the Federal courts that a rate of $1.50 was justified.

Borough Gas Company's Plea Granted

Trenton, N. J.—Permission was granted lately by the Public Utility Commission to the Borough Gas Company to issue $185,000 in stock and $490,000 in bonds or other securities. The company supplies the Atlantic Highlands, Keansburg and other Monmouth County sections.